



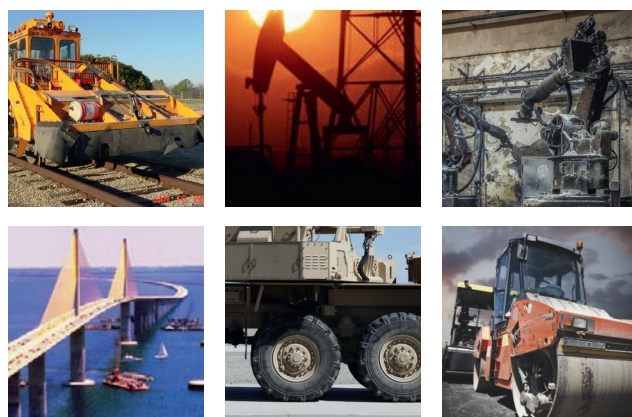
LCF-300 Analog Inclinometer

Introduction

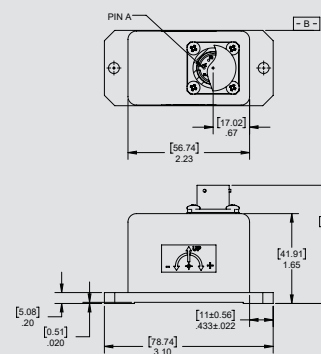
The LCF-300 Series flexure suspension servo fluid damped inclinometer is a $\pm 1^\circ$ to $\pm 90^\circ$ device designed for applications where high levels of shock and vibration are present. LCF-300 units are characterized by excellent turn on repeatability and very low hysteresis. It is available in three different versions (D, L, or S), varying input and output, and with either a 6 pin connector or a pin-terminal option in order to meet your specific needs.

Features

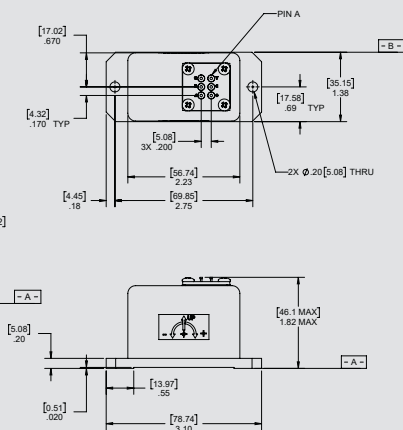
- Resolution of 1 μ rad
- Internal Temperature Sensor Available
- $\pm 5V$ DC, 0-5V DC, and 4-20mA Outputs Available
- Various Input Power Options Available
- RoHS Compliant



Connector Version



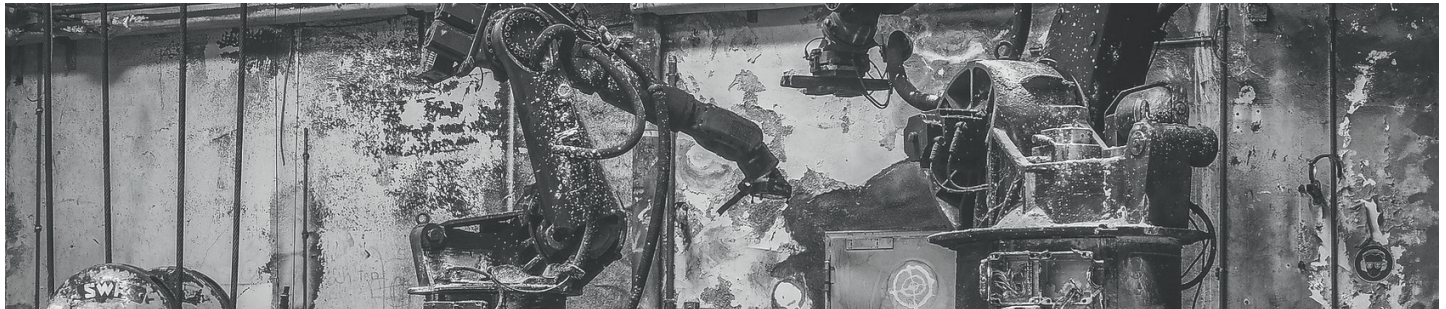
Pin-Terminal Version



Dimensions in [mm]

Application

- High-precision Geotech
- Oil and Gas, Riser Tilt Monitoring
- Railroad MOW Equipment
- Pavement Profiling Rigs
- Vehicle Wheel Alignment
- Robotics



LCF-300-D: ±5V output

The LCF-300-D Series Inclinometer is a rugged, high performance, single-axis tilt sensor designed for peak performance in extreme conditions. The fluid damped mechanism delivers superior noise rejection in high shock and vibration environments as well as excellent output stability. Units are available with a 6-pin connector or pin-terminals. This version features +/- 5V output.

Application

- High-precision Geotech
- Oil and Gas, Riser Tilt Monitoring
- Railroad MOW Equipment
- Pavement Profiling Rigs
- Vehicle Wheel Alignment
- Robotics

Performance specifications

Input range (°)	±1	±3	±14.5	±30	±45	±60	±90
Full range output (VDC) ±5% ¹							±5.00
Non linearity (%fro) max ²	0.05	0.05	0.02	0.02	0.02	0.02	0.03
Scale factor (Volts/g, nominal)	286.5	95.5	20.0	10.0	7.071	5.8	5.0
Scale factor temp. Sensitivity (ppm/°c, max)	300	100	100	100	100	100	100
Bandwidth (-3db) hz, nominal	0.5	2	15	20	20	30	30
Transverse axis misalignment (° max)	±0.25	±0.15	±0.5	±0.5	±0.5	±0.5	±0.5
0° Output (Volts Range)	±0.10	±0.04	±0.02	±0.02	±0.02	±0.02	±0.02
0° output temp. Sensitivity (Volts/°C, max)	0.015	0.002	0.001	0.0005	0.0005	0.0004	0.0003
Resolution & threshold (µrad) max							1

Notes

1. Full Range is defined "from negative full input angle to positive full input angle."
2. Nonlinearity is specified as deviation of output referenced to theoretical sine function value, independent of misalignment.

*Specifications subject to change without notice on account of continued product development

Pin option

A	Positive input power
B	Negative input power
C	Power/signal common
D	Signal out
E	N/C
F	N/C

Connector option

A	Red	Positive input power
B	White	Power/signal common
C	Black	Negative input power
D	Orange	Signal out
E	N/C	N/C
F	Blue	N/C



Product specifications LCF-300-D

Electrical

Number of axes	1
Input voltage range (VDC)	±12 to ±18
Input current (mA, max)	±15
Output impedance (Ohms, nom)	1
Noise (Vrms max)	0.002
Mass (g) max	230

Environmental

Seal	IP66
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Environmental

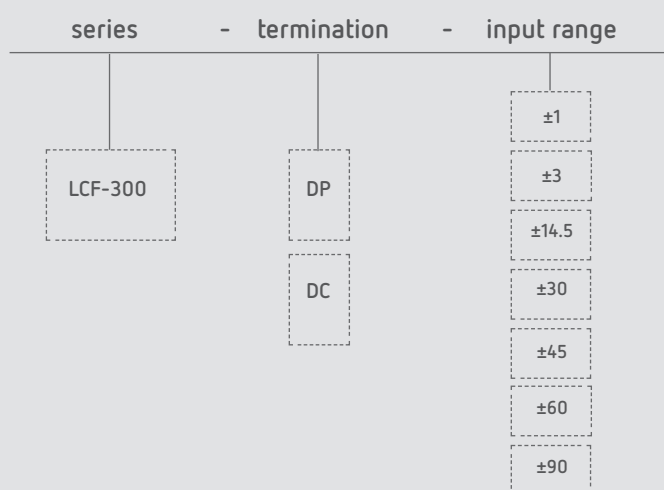
Operating temp. Range	-40° to +80°C
Storage temp. Range	-60° to +90°C
Shock	1500g, 0.5 msec, ½ sine

Notes

- Instruments recommendations
- Manufacture is Amphenol or equivalent

Ordering information

Model Numbers are comprised of the series, the series version, connection option, and the input range.



±1.0	PIN	LCF-300-DP-1	02550361-201
	Connector	LCF-300-DC-1	02550363-201
±3.0	PIN	LCF-300-DP-3	02550361-202
	Connector	LCF-300-DC-1	02550363-202
±14.5	PIN	LCF-300-DP-14.5	02550361-203
	Connector	LCF-300-DC-14.5	02550363-203
±30.0	PIN	LCF-300-DP-30	02550361-204
	Connector	LCF-300-DC-30	02550363-204
±45.0	PIN	LCF-300-DP-45	02550361-207
	Connector	LCF-300-DC-45	02550363-207
±60.0	PIN	LCF-300-DP-60	02550361-205
	Connector	LCF-300-DC-60	02550363-205
±90.0	PIN	LCF-300-DP-90	02550361-206
	Connector	LCF-300-DC-90	02550363-206



LCF-300-L: 4-20mA

The LCF-300-L Series Inclinometer is a rugged, high performance, single-axis tilt sensor designed for peak performance in extreme conditions. The fluid damped mechanism delivers superior noise rejection in high shock and vibration environments as well as excellent output stability. Units are available with a 6-pin connector or pin-terminals. This version features 4-20mA output.

Application

- High-precision Geotech
- Oil and Gas, Riser Tilt Monitoring
- Railroad MOW Equipment
- Pavement Profiling Rigs
- Vehicle Wheel Alignment
- Robotics

Performance specifications

Input range (°) ¹	±1	±3	±14.5	±30	±60	±90
Full range output (FRO) mA ±1.0% ¹	4-20					
Non linearity (%FRO) max ²	0.05	0.05	0.03	0.02	0.03	0.05
Scale factor (mA/g, nominal)	458.4	152.9	32.0	16.0	9.2	8.0
Scale factor temp. Sensitivity (ppm/°c, max)	300	300	100	60	60	60
Bandwidth (-3db) hz, nominal	0.5	2	15	20	30	30
Transverse axis misalignment (° max)	±0.25	±0.25	±0.5	±0.5	±0.5	±0.5
0° output (mA) nominal	12 ±0.3	12 ±0.6	12 ±0.3	12 ±0.3	12 ±0.3	12 ±0.3
0° output temp. Sensitivity (ma/°c) max	0.024	0.01	0.002	0.001	0.001	0.0008
Resolution & threshold (µrad) max	1					

Notes

1. Full Range is defined "from negative full input angle to positive full input angle."
2. Nonlinearity is specified as deviation of output referenced to theoretical sine function value, independent of misalignment.

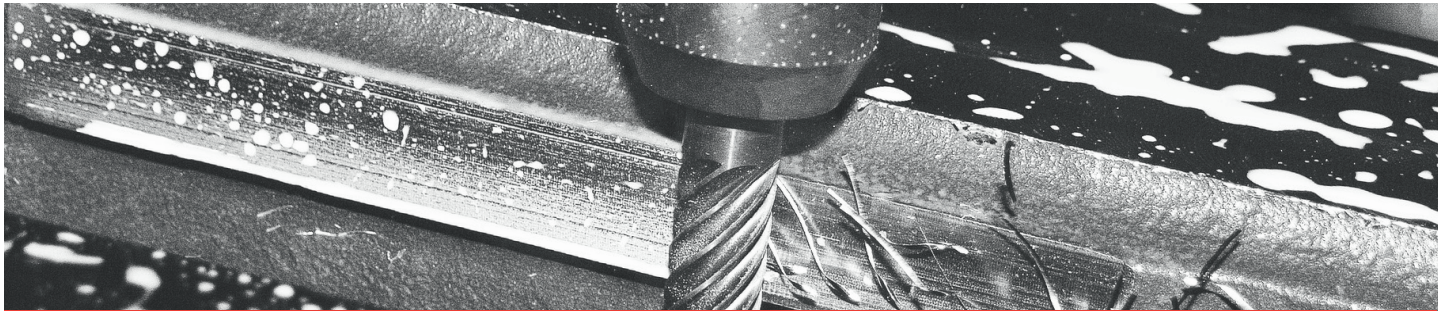
*Specifications subject to change without notice on account of continued product development

Pin option

A	Positive input power
B	Power /signal common
C	N/C
D	Signal out
E	N/C
F	N/C

Connector option

A	Red	Positive input power
B	White	Power /signal common
C	Black	N/C
D	Orange	Signal out
E	N/C	N/C
F	Blue	N/C



Product specifications LCF-300-L

Electrical

Number of axes	1
Input voltage range (VDC)	+20 to +30
Input current (mA, max)	50
Noise (mArms, max)	0.01
Mass (g) max	240

Environmental

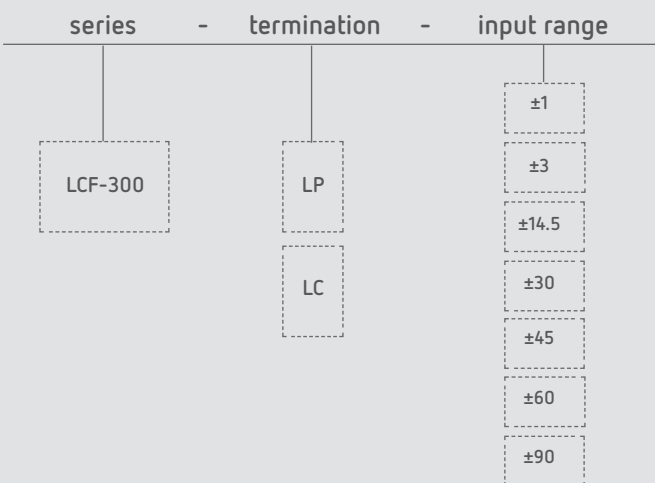
Operating temp. Range	-40° to +80°C
Storage temp. Range	-60° to +90°C
Shock	1000g, 1 msec, 1/2 sine

Environmental

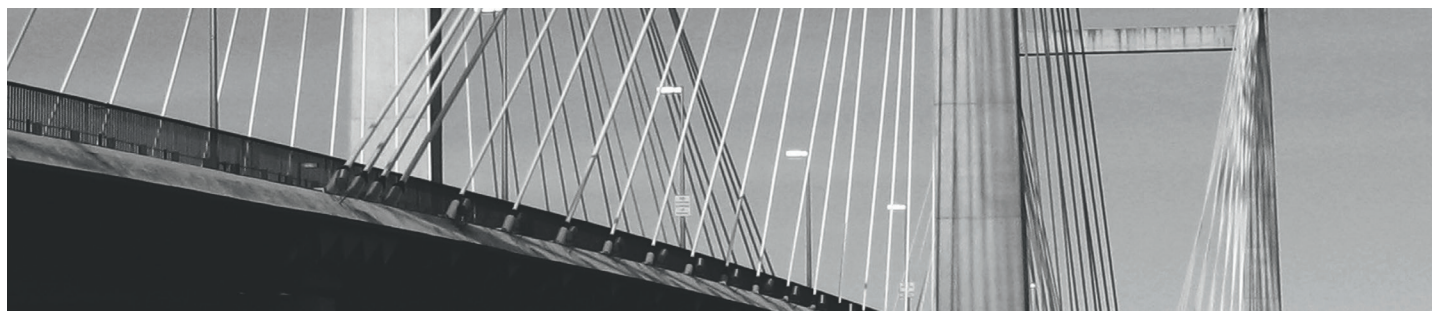
Seal	IP65
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Ordering information

Model Numbers are comprised of the series, the series version, connection option, and the input range.



±1.0	PIN	LCF-300-LP-1	02550361-301
	Connector	LCF-300-LC-1	02550363-301
±3.0	PIN	LCF-300-LP-3	02550361-302
	Connector	LCF-300-LC-3	02550363-302
±14.5	PIN	LCF-300-LP-14.5	02550361-303
	Connector	LCF-300-LC-14.5	02550363-303
±30.0	PIN	LCF-300-LP-30	02550361-304
	Connector	LCF-300-LC-30	02550363-304
±45.0	PIN	LCF-300-LP-45	02550361-307
	Connector	LCF-300-LC-45	02550363-307
±60.0	PIN	LCF-300-LP-60	02550361-305
	Connector	LCF-300-LC-60	02550363-305
±90.0	PIN	LCF-300-LP-90	02550361-306
	Connector	LCF-300-LC-90	02550363-306



LCF-300-S: 0-5V output

The LCF-300-S Series Inclinometer is a rugged, high performance, single-axis tilt sensor designed for peak performance in extreme conditions. The fluid damped mechanism delivers superior noise rejection in high shock and vibration environments as well as excellent output stability. Units are available with a 6-pin connector or pin-terminals. This version features 0-5V output.

Application

- High-precision Geotech
- Oil and Gas, Riser Tilt Monitoring
- Railroad MOW Equipment
- Pavement Profiling Rigs
- Vehicle Wheel Alignment
- Robotics

Performance specifications

Input range (°) ¹	±1	±3	±14.5	±30	±60	±90
Full range output (VDC) ±0.5% ¹	0-5					
Non linearity (%FRO) max ²	0.05	0.04	0.02	0.02	0.02	0.05
Scale factor (V/g, nominal)	143.2	47.8	10.0	5.0	2.9	2.5
Scale factor temp. sensitivity (ppm/°c, max)	350	150	100	60	60	60
Bandwidth (-3db) hz, nominal	0.5	2	15	20	30	30
Transverse axis misalignment (° max)	0.25	0.25	0.5	0.5	0.5	0.5
0° output (V) nominal	2.48 to 2.52					
0° output temp. Sensitivity (V/°c) max	0.015	0.005	0.001	0.0005	0.0004	0.0003
Resolution & threshold (µrad) max	1					

Notes

1. Full Range is defined "from negative full input angle to positive full input angle."
2. Nonlinearity is specified as deviation of output referenced to theoretical sine function value, independent of misalignment.

*Specifications subject to change without notice on account of continued product development

Pin option

A	Positive input power
B	N/C
C	Power/signal common
D	Signal out
E	N/C
F	N/C

Connector option

A	Red	Positive input power
B	White	Power/signal common
C	Black	N/C
D	Orange	Signal out
E	N/C	N/C
F	Blue	N/C



Product specifications LCF-300-S

Electrical

Number of axes	1
Input voltage range (VDC)	+9 to +18
Input current (mA, max)	40
Output impedance (Ohms, nom)	1
Noise (Vrms, max)	0.002
Mass (g)	230

Environmental

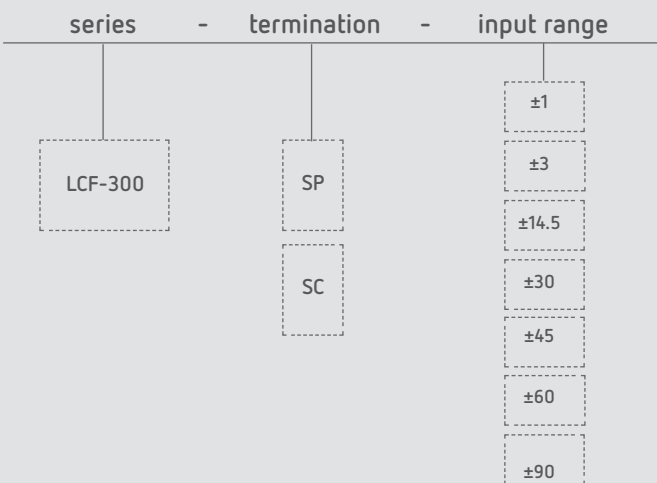
Operating temp. Range	-40° to +80°C
Storage temp. Range	-60° to +90°C
Shock	1500g, 0.5 msec, ½ sine

Environmental

Seal	IP66
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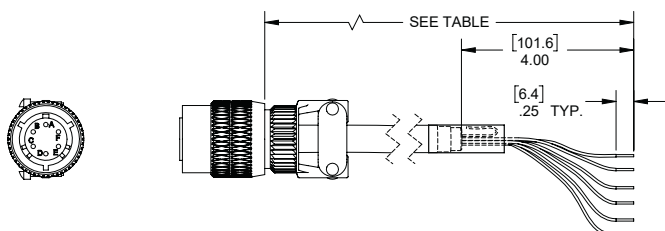
Ordering information

Model Numbers are comprised of the series, the series version, connection option, and the input range.



±1.0	PIN	LCF-300-SP-1	02550361-101
	Connector	LCF-300-SC-1	02550363-101
±3.0	PIN	LCF-300-SP-3	02550361-102
	Connector	LCF-300-SC-3	02550363-102
±14.5	PIN	LCF-300-SP-14.5	02550361-103
	Connector	LCF-300-SC-14.5	02550363-103
±30.0	PIN	LCF-300-SP-30	02550361-104
	Connector	LCF-300-SC-30	02550363-104
±45.0	PIN	LCF-300-SP-45	02550361-107
	Connector	LCF-300-SC-45	02550363-107
±60.0	PIN	LCF-300-SP-60	02550361-105
	Connector	LCF-300-SC-60	02550363-105
±90.0	PIN	LCF-300-SP-90	02550361-106
	Connector	LCF-300-SC-90	02550363-106

Accessories: connector cable



PART #	MODEL #	LENGTH ft (m)
879605-001	DSI-CBL-006-1	6 (1.83)
879605-002	DSI-CBL-010-1	10 (3.05)
879605-007	DSI-CBL-02M-1	6.56 (2)
879605-008	DSI-CBL-03M-1	9.84 (3)

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Ordering information

±1	D	PIN	LCF-300-DP-1	02550361-201
		Connector	LCF-300-DC-1	02550363-201
	L	PIN	LCF-300-LP-1	02550361-301
		Connector	LCF-300-LC-1	02550363-301
	S	PIN	LCF-300-SP-1	02550361-101
		Connector	LCF-300-SC-1	02550363-101
±3	D	PIN	LCF-300-DP-3	02550361-202
		Connector	LCF-300-DC-3	02550363-202
	L	PIN	LCF-300-LP-3	02550361-302
		Connector	LCF-300-LC-3	02550363-302
	S	PIN	LCF-300-SP-3	02550361-102
		Connector	LCF-300-SC-3	02550363-102
±14.5	D	PIN	LCF-300-DP-14.5	02550361-203
		Connector	LCF-300-DC-14.5	02550363-203
	L	PIN	LCF-300-LP-14.5	02550361-303
		Connector	LCF-300-LC-14.5	02550363-303
	S	PIN	LCF-300-SP-14.5	02550361-103
		Connector	LCF-300-SC-14.5	02550363-103
±30	D	PIN	LCF-300-DP-30	02550361-204
		Connector	LCF-300-DC-30	02550363-204
	L	PIN	LCF-300-LP-30	02550361-304
		Connector	LCF-300-LC-30	02550363-304
	S	PIN	LCF-300-SP-30	02550361-104
		Connector	LCF-300-SC-30	02550363-104

±45	D	PIN	LCF-300-DP-45	02550361-207
		Connector	LCF-300-DC-45	02550363-207
	L	PIN	LCF-300-LP-45	02550361-307
		Connector	LCF-300-LC-45	02550363-307
	S	PIN	LCF-300-SP-45	02550361-107
		Connector	LCF-300-SC-45	02550363-107
±60	D	PIN	LCF-300-DP-60	02550361-205
		Connector	LCF-300-DC-60	02550363-205
	L	PIN	LCF-300-LP-60	02550361-305
		Connector	LCF-300-LC-60	02550363-305
	S	PIN	LCF-300-SP-60	02550361-105
		Connector	LCF-300-SC-60	02550363-105
±90	D	PIN	LCF-300-DP-90	02550361-206
		Connector	LCF-300-DC-90	02550363-206
	L	PIN	LCF-300-LP-90	02550361-306
		Connector	LCF-300-LC-90	02550363-306
	S	PIN	LCF-300-SP-90	02550361-106
		Connector	LCF-300-SC-90	02550363-106