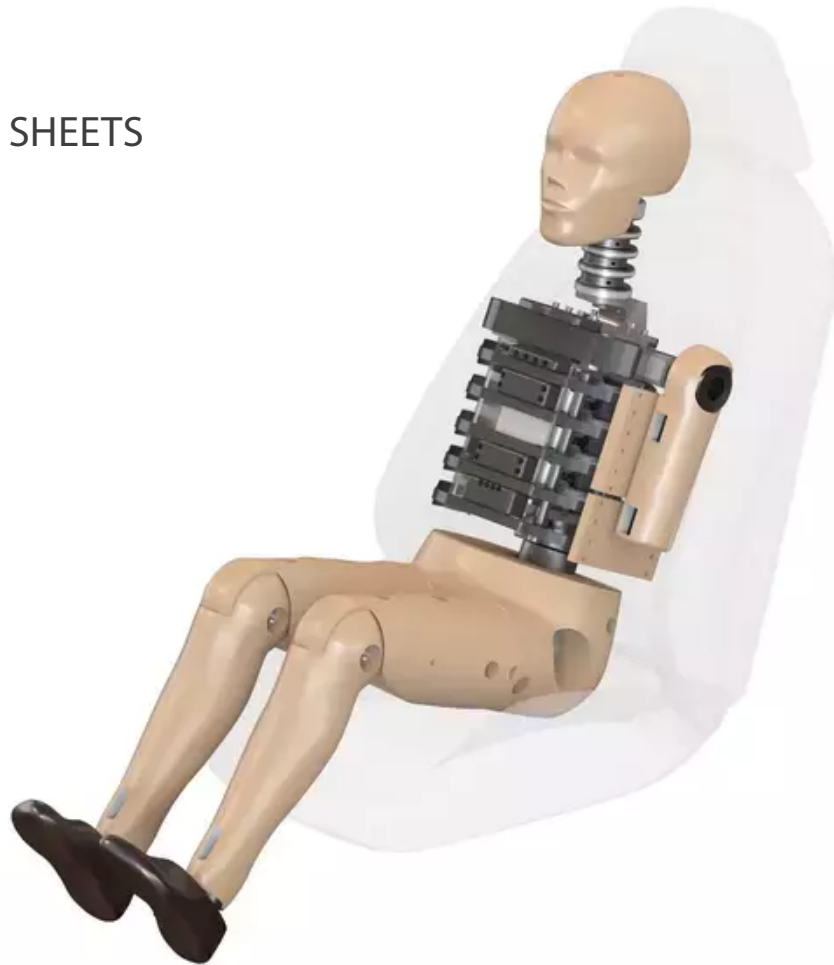


Crash Test Dummy Load Cells

SID-IIs

TECHNICAL DATA SHEETS



Technical Data Sheet



F1A3A11A



Load Cell, 1-axial Location: Acetabulum

Force direction

F_y

Application

SIDIs

Equivalent types

Denton: 3249J

Measurement specification

Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

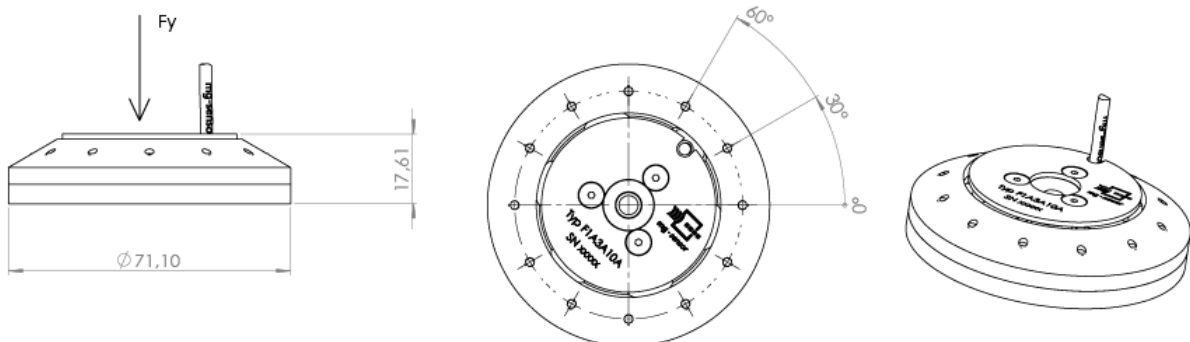


Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

F1A3A11A



Technical specification

	Unit	Value
		F_y
Measuring range	kN	8.9
Sensitivity ¹⁾	$\mu\text{V/V/kN}$	281
Output signal ^{1), 2)}	mV/V	2.5
Bridge resistance	Ω	540
Zero signal ¹⁾	mV/V	≤ 0.05
Amplitude non-linearity ³⁾	%	≤ 1.0
Hysteresis ³⁾	%	≤ 1.0
Channel cross talk ³⁾	%	–
Supply voltage	V	2–15
Ultimate load	%	150
Insulation resistance	M Ω	> 100
Temperature range	$^{\circ}\text{C}$	-30...+70
Weight (approximate)	g	140

All values measured at 10 V sensor supply voltage and at 23 $^{\circ}\text{C}$.

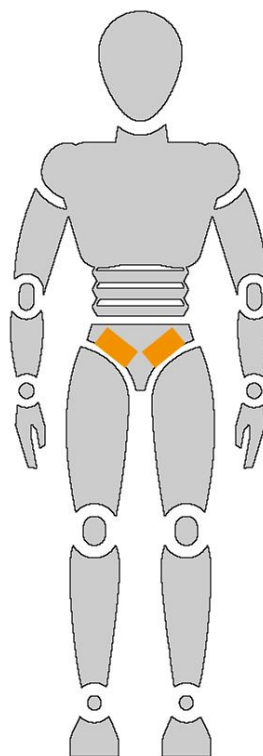
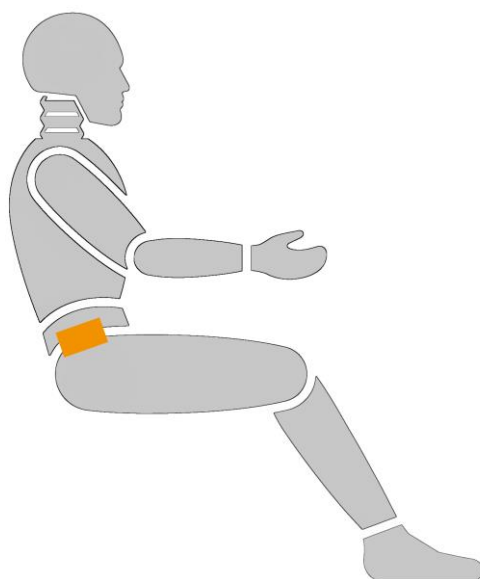
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



mg · sensor
PURE PRECISION

F1ACC11A



Load Cell, 1-axial

Location: Femur, Upper

Type: F1ACD11A (left)
F1ACE11A (right)

Force direction

F_y

Application

SIDIIs

Equivalent types

Denton: 3169 (3753/3754)

FTSS: IF-614 (IF-6141/6142)

Measurement specification

Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

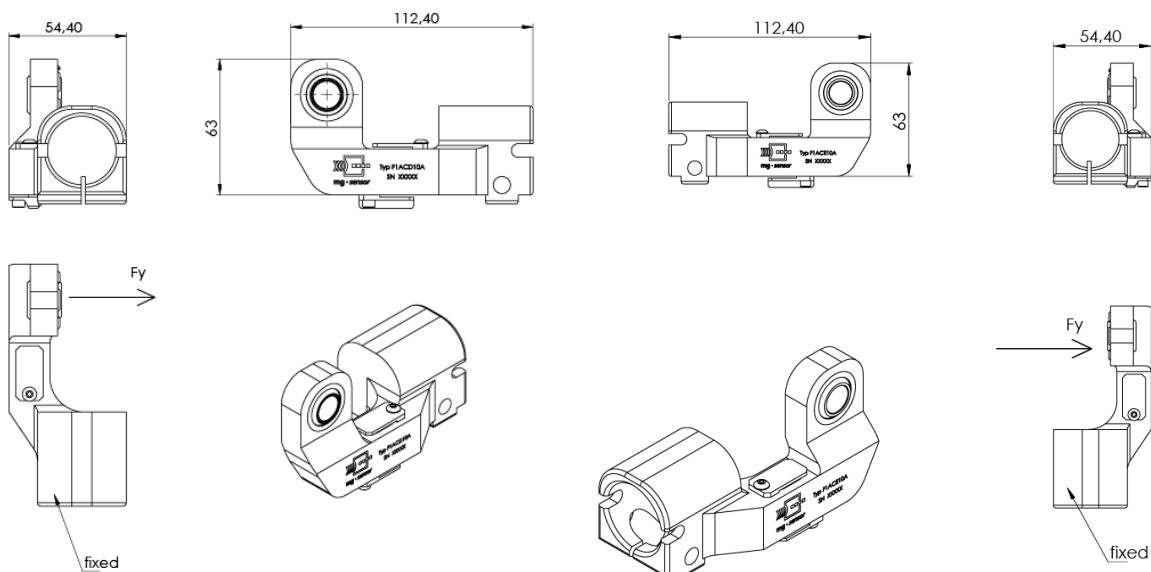


Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

F1ACC11A



Technical specification

	Unit	Value
		F_y
Measuring range	kN	8.9
Sensitivity ¹⁾	$\mu\text{V/V/kN}$	202
Output signal ^{1), 2)}	mV/V	1.8
Bridge resistance	Ω	350
Zero signal ¹⁾	mV/V	≤ 0.05
Amplitude non-linearity ³⁾	%	≤ 1.0
Hysteresis ³⁾	%	≤ 1.0
Channel cross talk ³⁾	%	–
Supply voltage	V	2–15
Ultimate load	%	150
Insulation resistance	M Ω	> 100
Temperature range	°C	-30...+70
Weight (approximate)	g	2 x 640

All values measured at 10 V sensor supply voltage and at 23 °C.

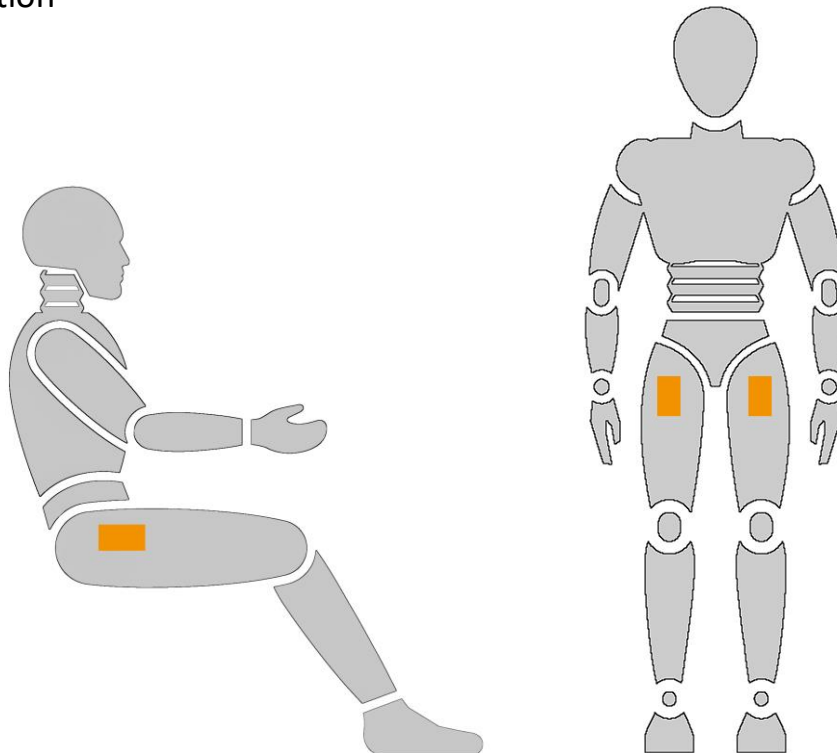
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



mg · sensor
PURE PRECISION

F1AFA11A



Load Cell, 1-axial Location: Iliac Wing

Force direction

F_y

Application

SIDIs

Equivalent types

Denton: 3228J

Measurement specification

Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

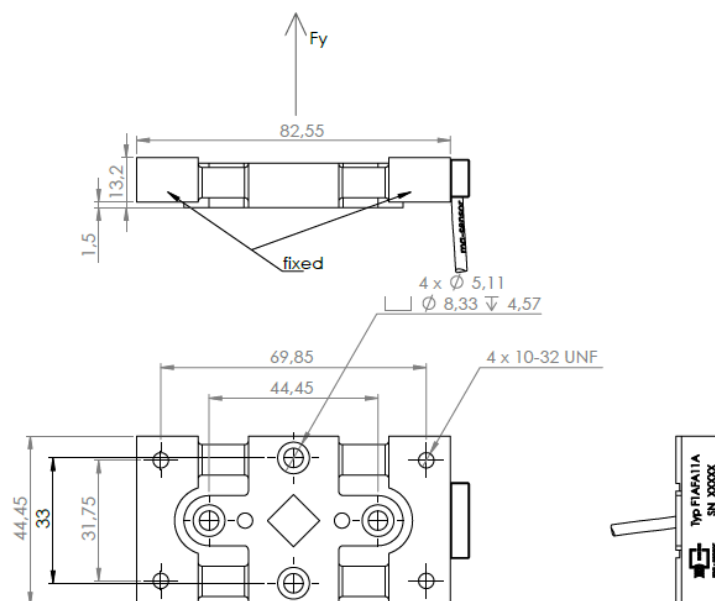


Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

F1AFA11A



Technical specification

	Unit	Value
		F_y
Measuring range	kN	13.5
Sensitivity ¹⁾	$\mu\text{V/V/kN}$	133
Output signal ^{1), 2)}	mV/V	1.8
Bridge resistance	Ω	350
Zero signal ¹⁾	mV/V	≤ 0.05
Amplitude non-linearity ³⁾	%	≤ 1.0
Hysteresis ³⁾	%	≤ 1.0
Channel cross talk ³⁾	%	–
Supply voltage	V	2–15
Ultimate load	%	150
Insulation resistance	M Ω	> 100
Temperature range	°C	-30...+70
Weight (approximate)	g	300

All values measured at 10 V sensor supply voltage and at 23 °C.

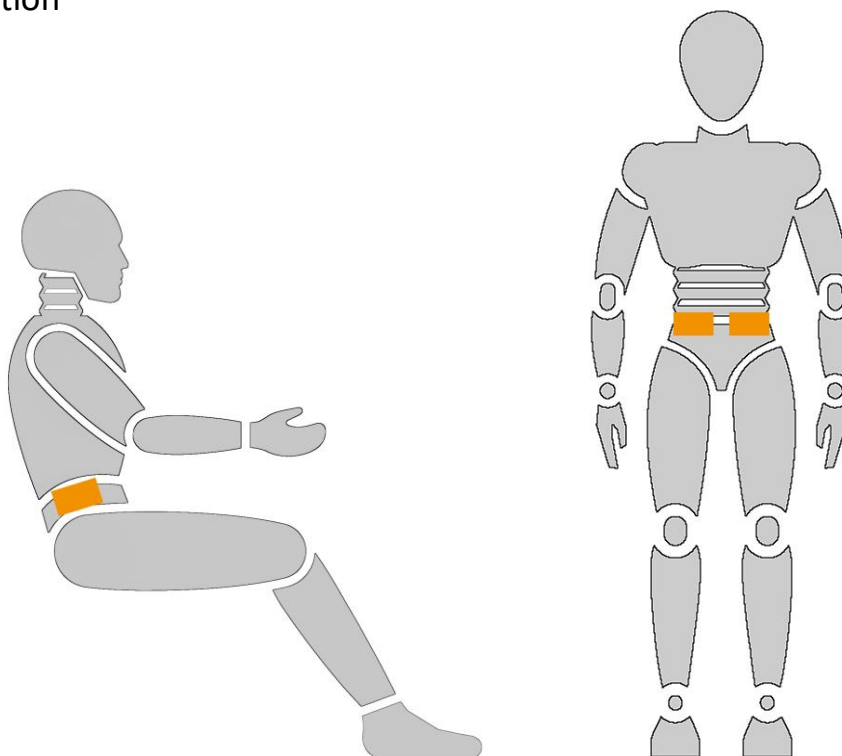
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



N3ALA11A



Load Cell, 3-axial

Location: Neck, Upper

Force direction

F_x, F_z, M_y

Application

H3-5%, H3-50%, H3-95%,
SID2s, H3-6YO, H3-10YO

Equivalent types

Denton: 2564 (1716 6-axis)
FTSS: (IF-205 6-axis)

Measurement specification

Resistive
Strain gauges

Options

ID-Module integrated in sensor
Polarity according to SAE J211

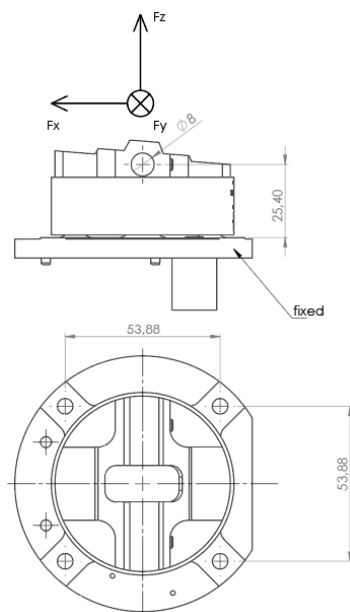
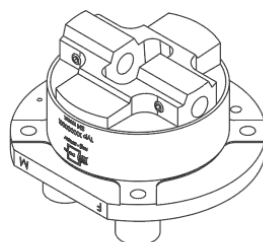
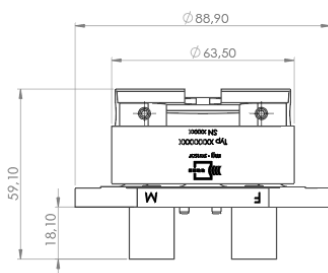


Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

N3ALA11A



Technical specification

	Unit	Value		
		F _x	F _z	M _y
Measuring range	kN Nm	8.9	13.3	282
Sensitivity ¹⁾	μV/V/kN	191	105	6.0
	μV/V/Nm			
Output signal ^{1), 2)}	mV/V	1.7	1.4	1.7
Bridge resistance	Ω	350	700	350
Zero signal ¹⁾	mV/V	≤ 0.05		
Amplitude non-linearity ³⁾	%	≤ 1.0		
Hysteresis ³⁾	%	≤ 1.0		
Channel cross talk ³⁾	%	≤ 5.0		
Supply voltage	V	2–15		
Ultimate load	%	150		
Insulation resistance	MΩ	> 100		
Temperature range	°C	-30...+70		
Weight (approximate)	g	680		

All values measured at 10 V sensor supply voltage and at 23 °C.

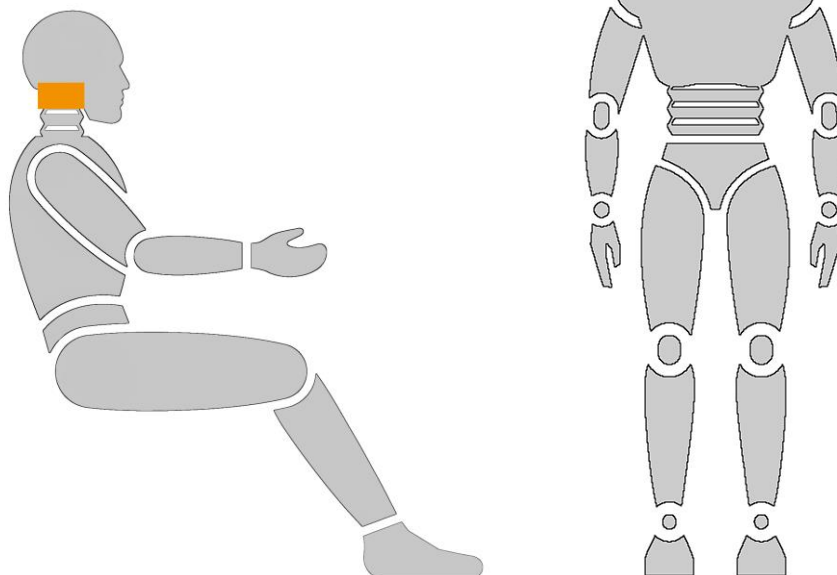
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



N4ALA11A



Load Cell, 4-axial

Location: Neck

Force direction

F_x, F_y, F_z, M_y

Application

H3-5%, H3-50%, H3-95%,

H3-6YO, H3-10YO

SIDIIs

Equivalent types

FTSS: IF-256

Measurement specification

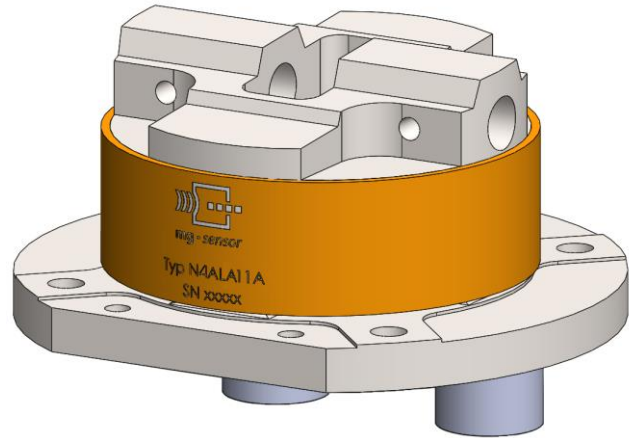
Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

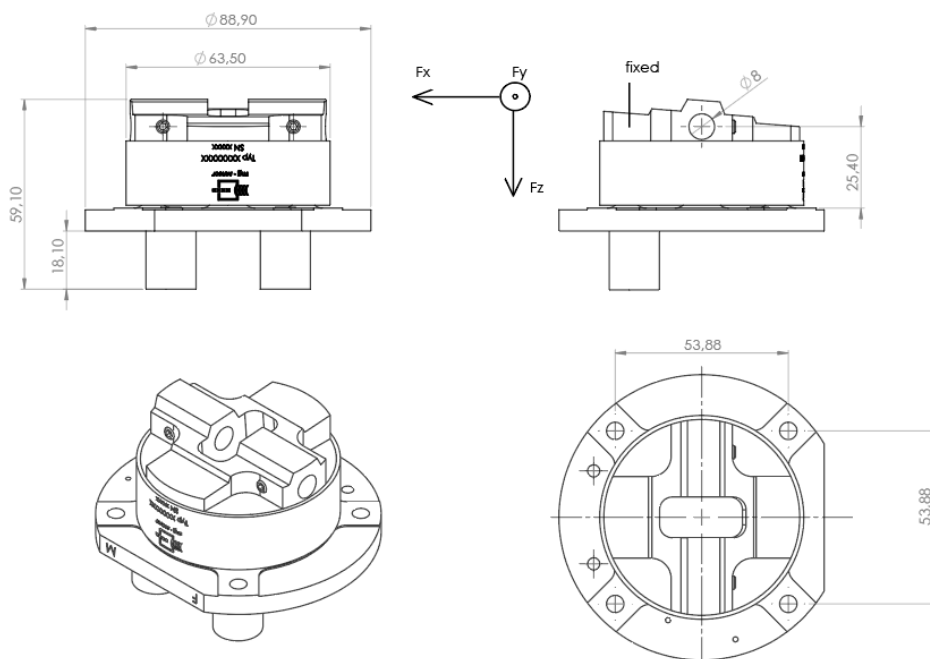


Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

N4ALA11A



Technical specification

	Unit	Value			
		F _x	F _y	F _z	M _y
Measuring range	kN Nm	8.9	8.9	13.3	282
Sensitivity ¹⁾	μV/V/kN	191	191	105	
	μV/V/Nm				6.0
Output signal ^{1), 2)}	mV/V	1.7	1.7	1.4	1.7
Bridge resistance	Ω	350	350	700	350
Zero signal ¹⁾	mV/V	≤ 0.05			
Amplitude non-linearity ³⁾	%	≤ 1.0			
Hysteresis ³⁾	%	≤ 1.0			
Channel crosstalk ³⁾	%	≤ 5.0			
Supply voltage	V	2–15			
Ultimate load	%	150			
Insulation resistance	MΩ	> 100			
Temperature range	°C	-30...+70			
Weight (approximate)	g	630			

All values measured at 10 V sensor supply voltage and at 23 °C.

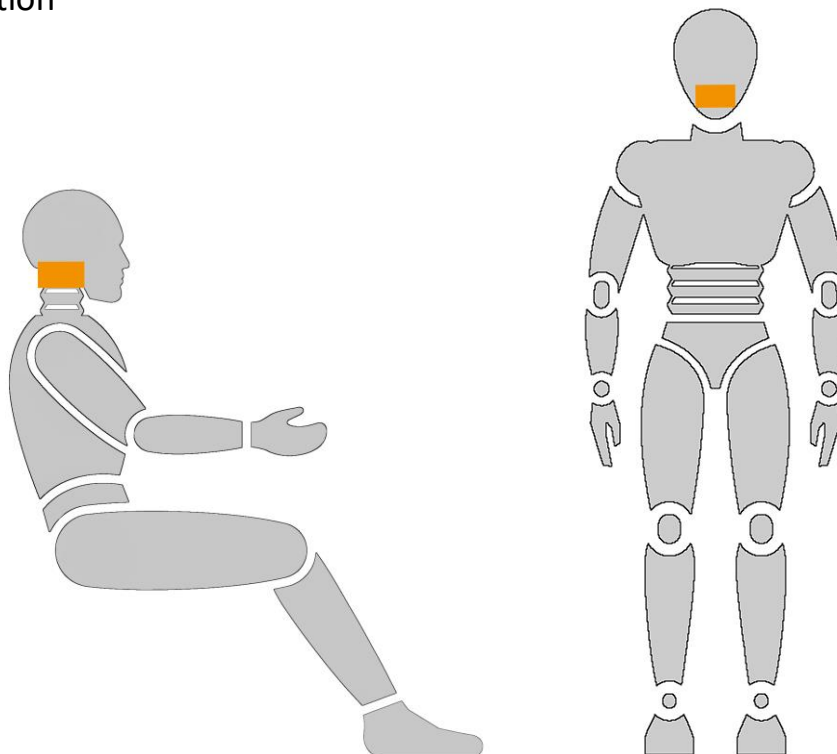
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



N6ACB11A



Load Cell, 6-axial Location: Femur

Force direction

$F_x, F_y, F_z, M_x, M_y, M_z$

Application

H2-50%, H3-5%, H3-50%, H3-95%, Thor,
BioSID, EUROSID, ES2, ES1, SIDIIs

Equivalent types

Denton: 4257
FTSS: IF-631

Measurement specification

Resistive
Strain gauges

Options

ID-Module integrated in sensor
Polarity according to SAE J211

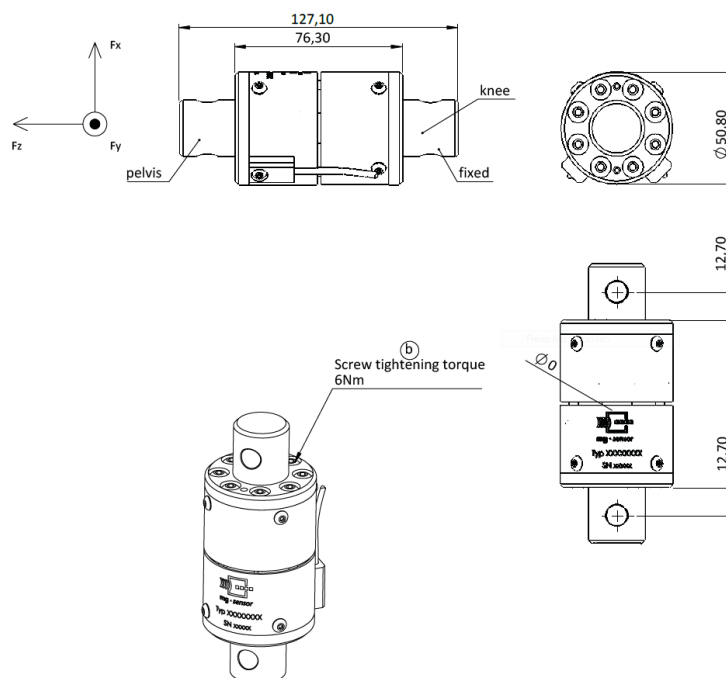


Technical description

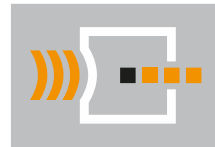
The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

N6ACB11A



Technical specification

	Unit	Value					
		F _x	F _y	F _z	M _x	M _y	M _z
Measuring range	kN Nm	13.4	13.4	22.3	340	340	340
Sensitivity ¹⁾	μV/V/kN	112	112	58.3			
	μV/V/Nm				4.1	4.1	6.7
Output signal ^{1), 2)}	mV/V	1.5	1.5	1.3	1.4	1.4	2.3
Bridge resistance	Ω	350	350	700	350	350	700
Zero signal ¹⁾	mV/V	≤ 0.05					
Amplitude non-linearity ³⁾	%	≤ 1.0					
Hysteresis ³⁾	%	≤ 1.0					
Channel crosstalk ³⁾	%	≤ 5.0					
Supply voltage	V	2–15					
Ultimate load	%	150					
Insulation resistance	MΩ	> 100					
Temperature range	°C	-30...+70					
Weight (approximate)	g	900					

All values measured at 10 V sensor supply voltage and at 23 °C.

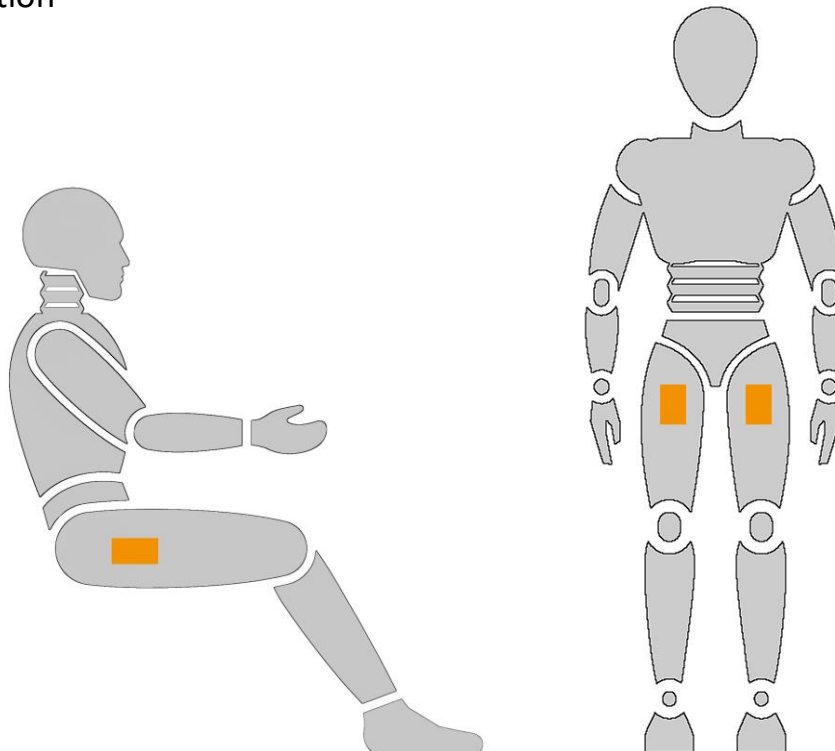
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



N6ACC11A



Load Cell, 6-axial Location: Femur

Force direction

$F_x, F_y, F_z, M_x, M_y, M_z$

Application

H2-50%, H3-5%, H3-50%, H3-95%, Thor,
BioSID, EUROSID, ES2, ES1, SIDiIs

Equivalent types

FTSS: IF-625

Measurement specification

Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

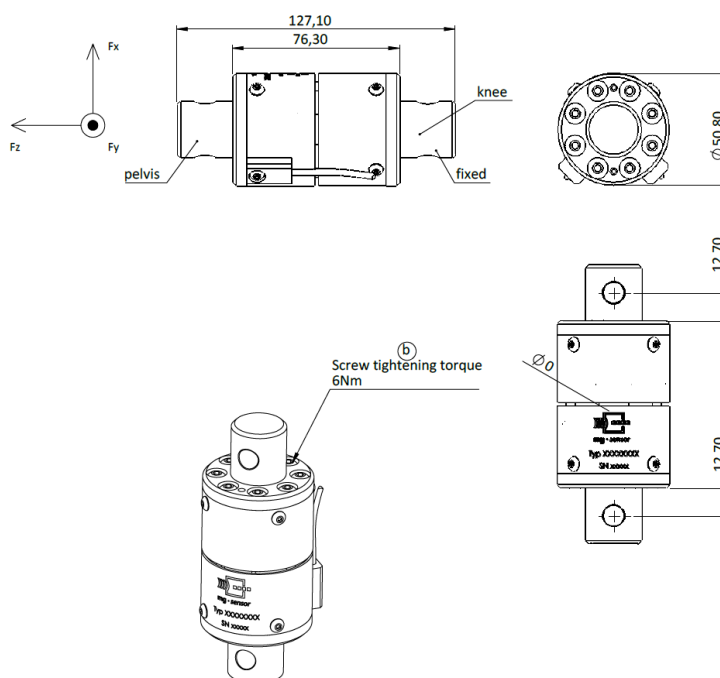


Technical description

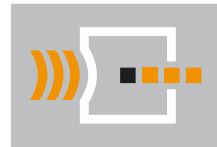
The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

N6ACC11A



Technical specification

	Unit	Value					
		F _x	F _y	F _z	M _x	M _y	M _z
Measuring range	kN Nm	13.4	13.4	22.3	340	340	340
Sensitivity ¹⁾	μV/V/kN μV/V/Nm	113	113	58.3	4.1	4.1	6.6
Output signal ^{1), 2)}	mV/V	1.5	1.5	1.3	1.4	1.4	2.3
Bridge resistance	Ω	350	350	700	350	350	700
Zero signal ¹⁾	mV/V	≤ 0.05					
Amplitude non-linearity ³⁾	%	≤ 1.0					
Hysteresis ³⁾	%	≤ 1.0					
Channel crosstalk ³⁾	%	≤ 5.0					
Supply voltage	V	2–15					
Ultimate load	%	150					
Insulation resistance	MΩ	> 100					
Temperature range	°C	-30...+70					
Weight (approximate)	g	1000					

All values measured at 10 V sensor supply voltage and at 23 °C.

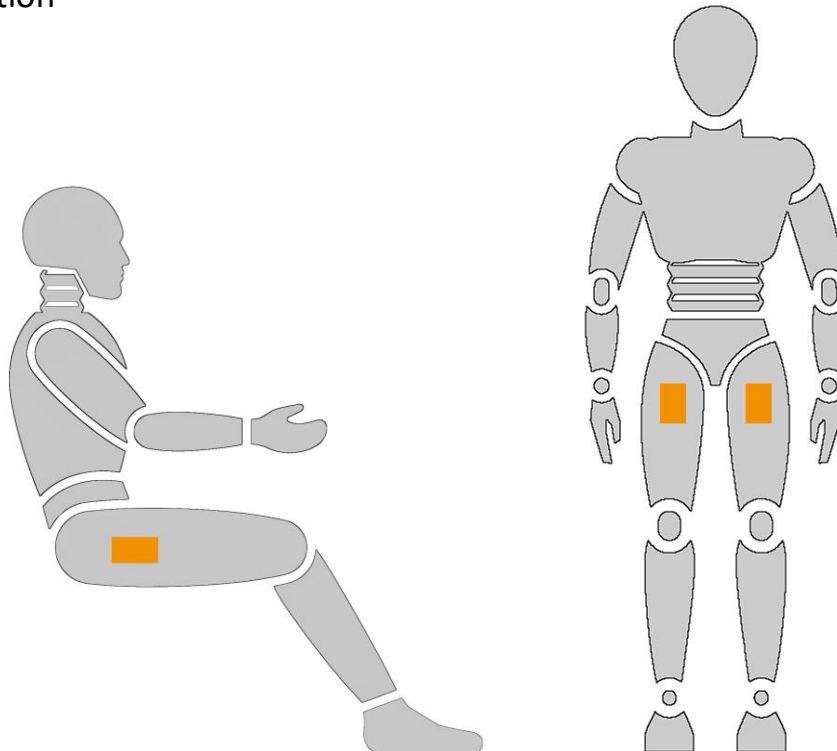
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



N6ACG11A

Load Cell, 6-axial with 3-axial ARS integration Location: Femur

Force direction

$F_x, F_y, F_z, M_x, M_y, M_z$

Application

H3-5%, H3-50%, H3-95%,
BioSID, EUROSID, SIDIIs

Equivalent types

Measurement specification

Resistive

Strain gauges

Options

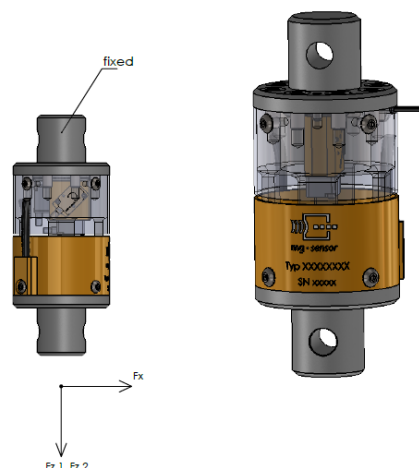
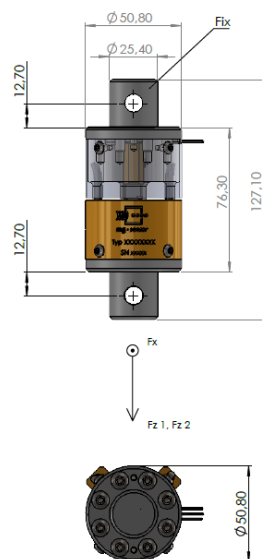
ID-Module integrated in sensor
Polarity according to SAE J211



Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.

Dimensions



Technical Data Sheet



N6ACG11A

Technical specification

	Unit	Value					
		F _x	F _y	F _z	M _x	M _y	M _z
Measuring range	kN Nm	13.4	13.4	22.3	340	340	340
Sensitivity ¹⁾	μV/V/kN	112	112	62.8			
	μV/V/Nm				4.1	4.1	6.7
Output signal ^{1), 2)}	mV/V	1.5	1.5	1.4	1.4	1.4	2.3
Bridge resistance	Ω	350	350	700	350	350	700
Zero signal ¹⁾	mV/V	≤ 0.05					
Amplitude non-linearity ³⁾	%	≤ 1.0					
Hysteresis ³⁾	%	≤ 1.0					
Channel crosstalk ³⁾	%	≤ 5.0					
Supply voltage	V	2–15					
Ultimate load	%	150					
Insulation resistance	MΩ	> 100					
Temperature range	°C	-30...+70					
Weight (approximate)	g	900					

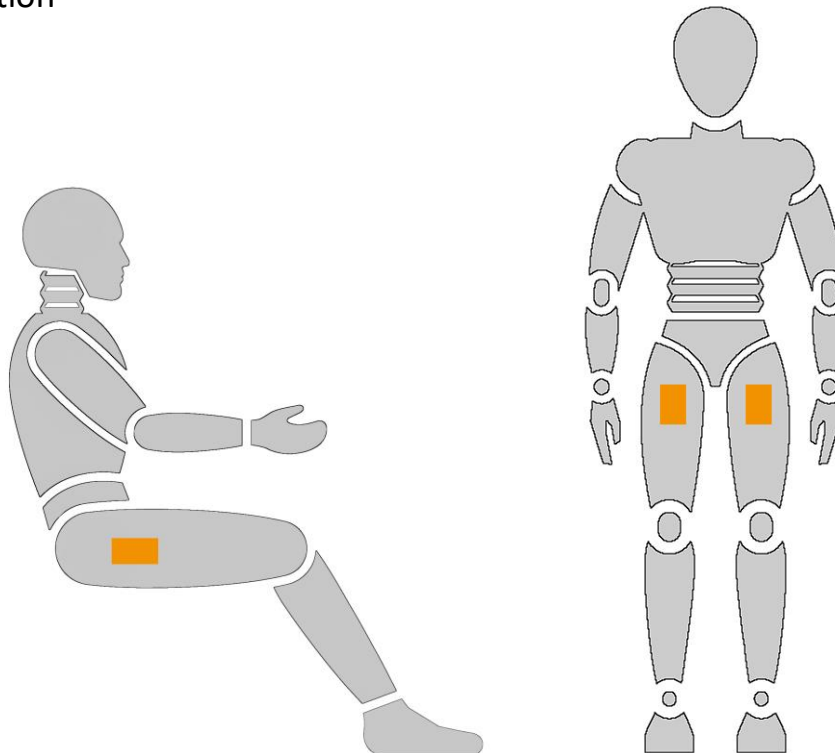
All values measured at 10 V sensor supply voltage and at 23 °C.

¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range

Dummy application



Technical Data Sheet



N6AIB11A



Load Cell, 6-axial

Location: Lumbar Spine

Force direction

F_x, F_y, F_z, M_x, M_y

Application

SIDIs

Equivalent types

Denton: 3229

FTSS: IF-414

Measurement specification

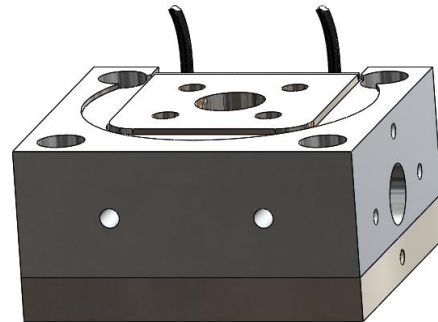
Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

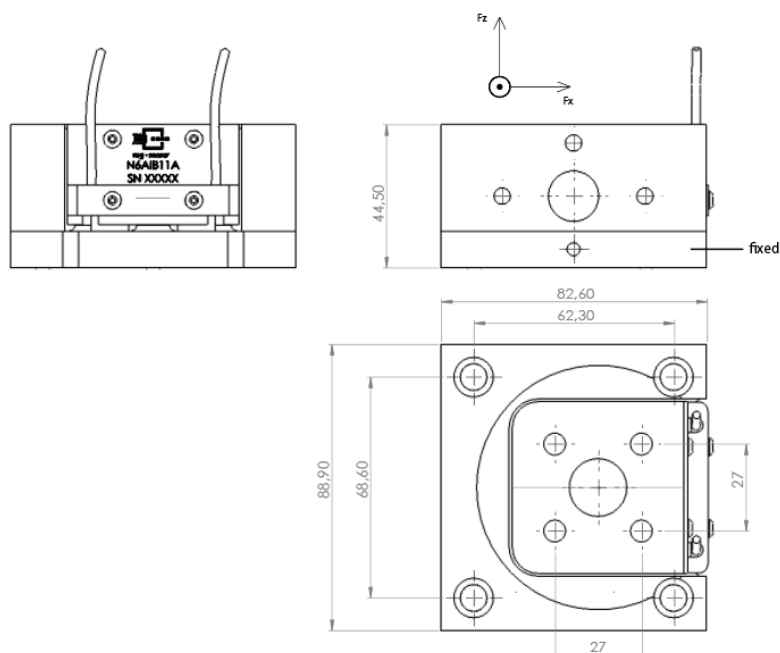


Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

N6AIB11A



Technical specification

	Unit	Value					
		F _x	F _y	F _z	M _x	M _y	M _z
Measuring range	kN Nm	13.3	13.3	13.3	450	450	226
Sensitivity ¹⁾	μV/V/kN	150	150	90			
	μV/V/Nm				6.7	6.7	12
Output signal ^{1), 2)}	mV/V	2.0	2.0	1.2	3.0	3.0	2.7
Bridge resistance	Ω	350	350	700	350	350	700
Zero signal ¹⁾	mV/V	≤ 0.05					
Amplitude non-linearity ³⁾	%	≤ 1.0					
Hysteresis ³⁾	%	≤ 1.0					
Channel cross talk ³⁾	%	≤ 5.0					
Supply voltage	V	2–15					
Ultimate load	%	150					
Insulation resistance	MΩ	> 100					
Temperature range	°C	-30...+70					
Weight (approximate)	g	1600 incl. mass block					

All values measured at 10 V sensor supply voltage and at 23 °C.

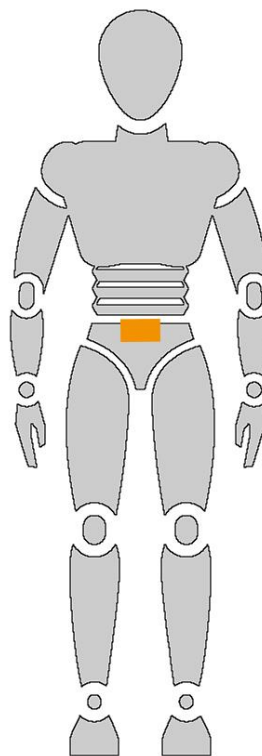
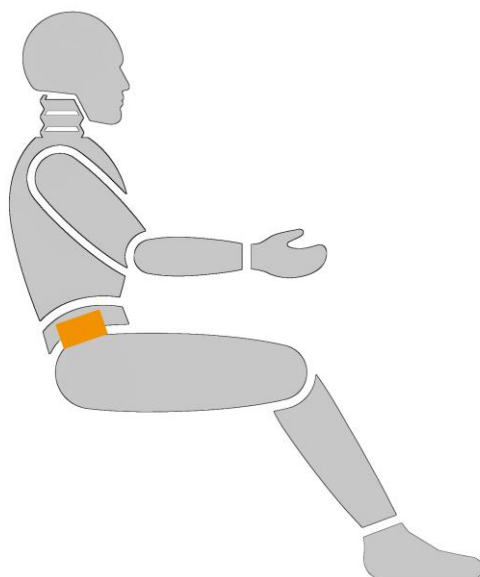
¹⁾ Typical value

²⁾ At nominal load

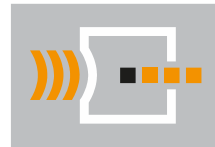
³⁾ Relative nominal range



Dummy application



Technical Data Sheet



mg · sensor
PURE PRECISION

N6AIM11A



Load Cell, 6-axial Location: Lumbar Spine

Force direction

$F_x, F_y, F_z, M_x, M_y, M_z$

Application

H2-50%

SIDIIs

Equivalent types

Denton: 1708

FTSS: IF-405

Measurement specification

Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

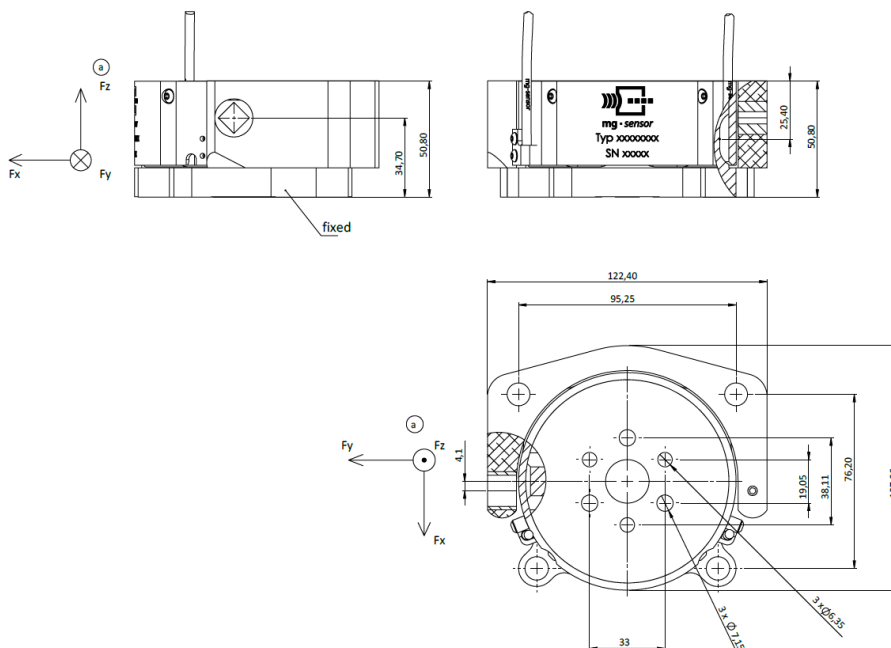


Technical description

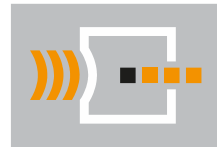
The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

N6AIM11A



Technical specification

	Unit	Value					
		F _x	F _y	F _z	M _x	M _y	M _z
Measuring range	kN Nm	13.5	13.5	22.3	1130	1130	450
Sensitivity ¹⁾	μV/V/kN	74	74	45			
	μV/V/Nm				1.8	1.8	2.7
Output signal ^{1), 2)}	mV/V	1.0	1.0	1.0	2.0	2.0	1.2
Bridge resistance	Ω	350	350	700	350	350	700
Zero signal ¹⁾	mV/V	≤ 0.05					
Amplitude non-linearity ³⁾	%	≤ 1.0					
Hysteresis ³⁾	%	≤ 1.0					
Channel crosstalk ³⁾	%	≤ 5.0					
Supply voltage	V	2–15					
Ultimate load	%	150					
Insulation resistance	MΩ	> 100					
Temperature range	°C	-30...+70					
Weight (approximate)	g	1600					

All values measured at 10 V sensor supply voltage and at 23 °C.

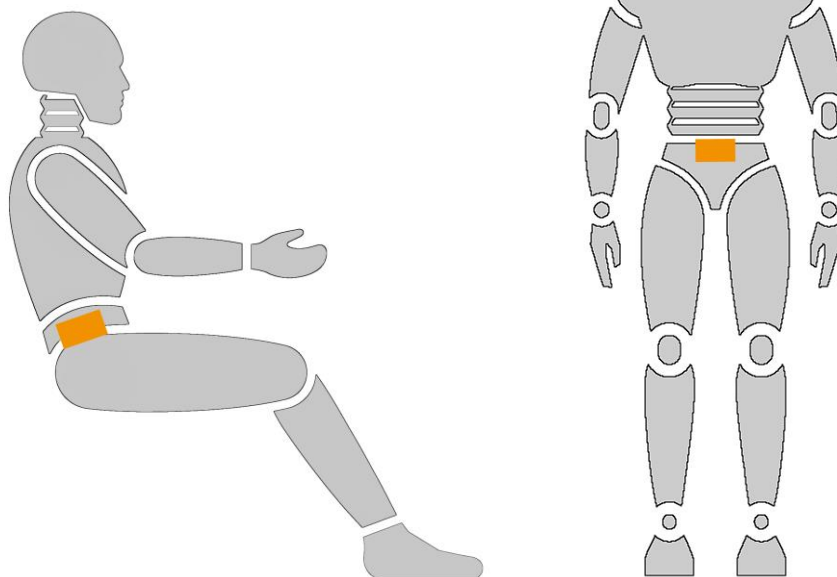
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



N6AKA11A



Load Cell, 6-axial

Location: Neck, Lower

Force direction

$F_x, F_y, F_z, M_x, M_y, M_z$

Application

SIDIs

Equivalent types

Denton: 3166

FTSS: (IF-255)

Measurement specification

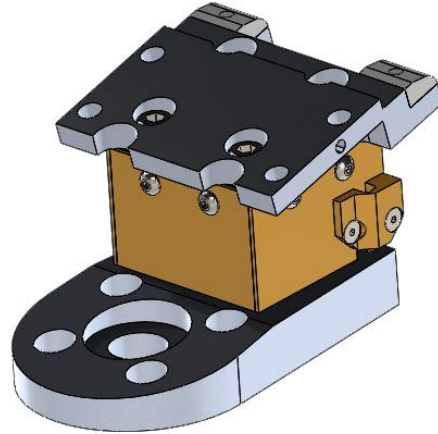
Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

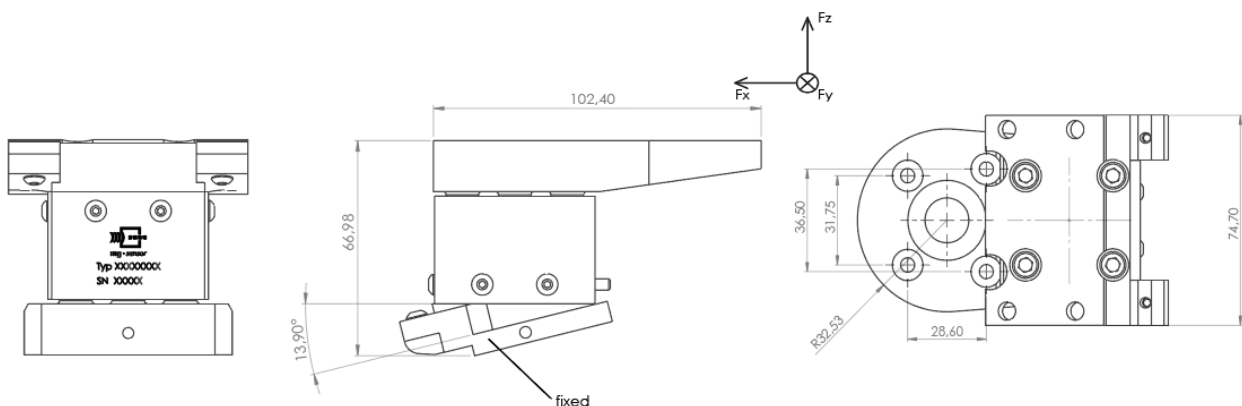


Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



mg · sensor
PURE PRECISION

N6AKA11A



Technical specification

	Unit	Value					
		F _x	F _y	F _z	M _x	M _y	M _z
Measuring range	kN Nm	13.3	13.3	13.3	452	452	339
Sensitivity ¹⁾	μV/V/kN	165	165	90			
	μV/V/Nm				4.4	4.4	5.9
Output signal ^{1), 2)}	mV/V	2.2	2.2	1.2	2.0	2.0	2.0
Bridge resistance	Ω	350	350	700	700	700	350
Zero signal ¹⁾	mV/V	≤ 0.05					
Amplitude non-linearity ³⁾	%	≤ 1.0					
Hysteresis ³⁾	%	≤ 1.0					
Channel crosstalk ³⁾	%	≤ 5.0					
Supply voltage	V	2–15					
Ultimate load	%	150					
Insulation resistance	MΩ	> 100					
Temperature range	°C	-30...+70					
Weight (approximate)	g	550					

All values measured at 10 V sensor supply voltage and at 23 °C.

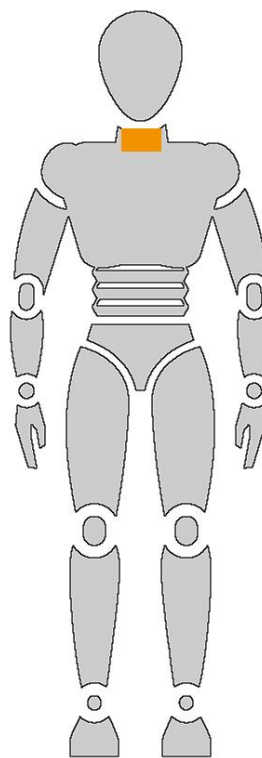
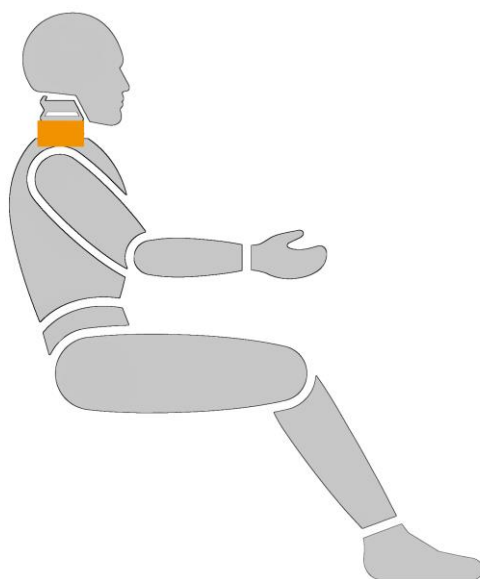
¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range



Dummy application



Technical Data Sheet



N6AKQ11A



Load Cell, 6-axial

Location: Neck, Lower

Force direction

$F_x, F_y, F_z, M_x, M_y, M_z$

Application

SIDIs

Equivalent types

FTSS: IF-269

Measurement specification

Resistive

Strain gauges

Options

ID-Module integrated in sensor

Polarity according to SAE J211

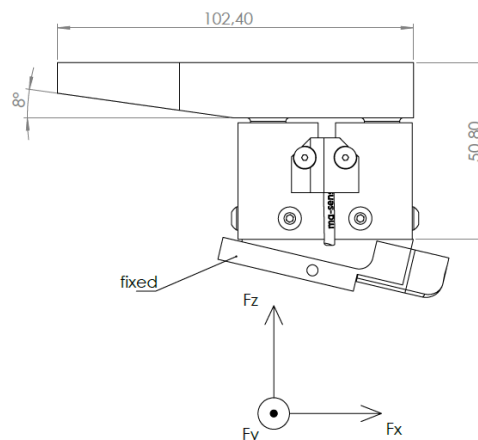
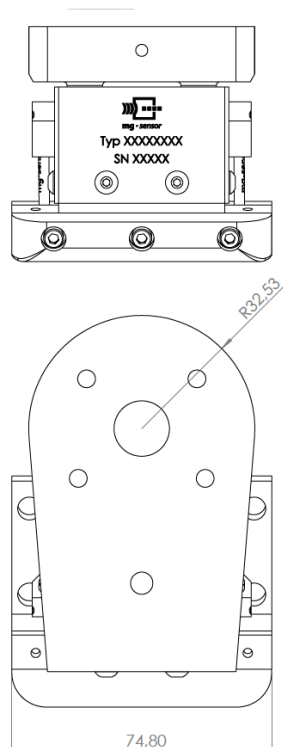


Technical description

The applied force causes compression or strain of the base body. The deformation is measured using strain gauges. The wiring of multiple strain gauges for a full bridge circuit compensates for the temperature influence on the zero signal and the cross-influence from other force and torque application.



Dimensions



Technical Data Sheet



N6AKQ11A

Technical specification

	Unit	Value					
		F _x	F _y	F _z	M _x	M _y	M _z
Measuring range	kN Nm	11.1	11.1	11.1	340	340	340
Sensitivity ¹⁾	μV/V/kN	200	200	46			
	μV/V/Nm				4.1	4.1	5.4
Output signal ^{1), 2)}	mV/V	2.2	2.2	0.5	1.4	1.4	1.8
Bridge resistance	Ω	350	350	1400	700	700	350
Zero signal ¹⁾	mV/V	≤ 0.05					
Amplitude non-linearity ³⁾	%	≤ 1.0					
Hysteresis ³⁾	%	≤ 1.0					
Channel crosstalk ³⁾	%	≤ 5.0					
Supply voltage	V	2–15					
Ultimate load	%	150					
Insulation resistance	MΩ	> 100					
Temperature range	°C	-30...+70					
Weight (approximate)	g	500					

All values measured at 10 V sensor supply voltage and at 23 °C.

¹⁾ Typical value

²⁾ At nominal load

³⁾ Relative nominal range

Dummy application

