

多维力传感器

Multi-axis Force Sensor

本公司自主生产的多维力传感器包含(二维, 三维, 六维), 采用电阻应变式原理, 通过特殊的解耦设计, 使得综合误差相对较小。多维力传感器量程及尺寸范围跨度大, 结构合理目前已应用于机器人, 飞机和船舶制造等多个领域。

(仅展示部分常规品, 支持非标定制。)

Multi-axis Force Sensor:

Our company's self-produced multi-dimensional force sensors include (2D, 3D), which adopt the principle of resistance strain. Through special decoupling design, the comprehensive error is relatively small. The measuring range and size range of the multi-dimensional force sensor are large, with a reasonable structure, and it has been applied in many fields such as robots, aircraft, and shipbuilding.

(Please note that the products showcased represent only a portion of our standard offerings, as we also support OEM&ODM.)



主要应用于:

机器人、飞机、船舶制造等领域测量多方向力。

Applications:

Measurement of multi-directional forces in robotics, aircraft, shipbuilding and other fields.

专业生产传感器

目录 Contents

多维力传感器系列



FA701 159



FA702 160



FA703 161



FA704C 162



FA704D 163



FA728 164



FA731 165



FA742 166



FA778-5600系列
167



FA779 168

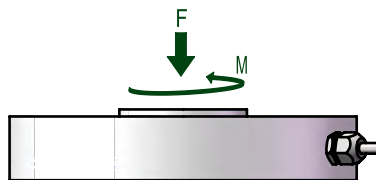


FA7155系列
169

FA701



受力方向 Load Direction



技术参数 Specifications

传感器物理参数 Sensor Physical Parameters

额定量程 Nominal Capacity	N.m	F:20,30,50,100,200,500,1000,2000N.m M:1,2,3,5,10,20,30,50N.m
过载能力 Safe Overload	%	150
工作温度 Operating Temperature	°C	-20~75
防护等级 Ingress Protection (IP)	IP	65
电缆长度 Cable	M	φ4×3m
弹性体材料 Spring Element Material		合金钢/铝合金
测量方向 Loading Direction		压扭

传感器精度参数 Sensor Accuracy Parameters

综合精度 Combined Error	%	≤0.1
线性误差 Non-linearity	%	≤0.1
相对滞后 Hysteresis	%	≤0.1
重复误差 Repeatability	%	≤0.15
互扰误差 Crosstalk	%	≤0.2
温度漂移 Temperature Effect on Output	%	0.1%/10°C

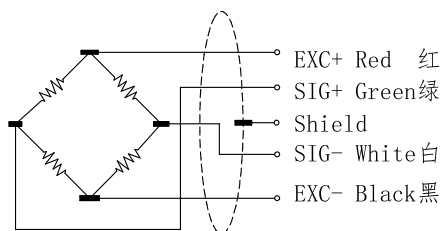
传感器电气参数 Electrical Parameters

满量程输出 Rated Output	mV/V	1.0±10%
激励电压 Excitation Voltage	V(DC)	5~15
绝缘电阻 Insulation Resistance	MΩ/VDC	≥5000/100

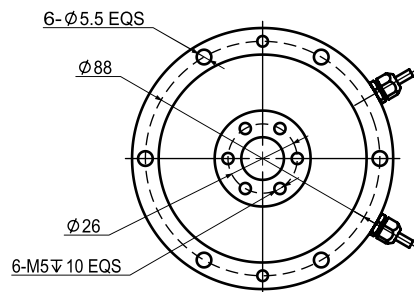
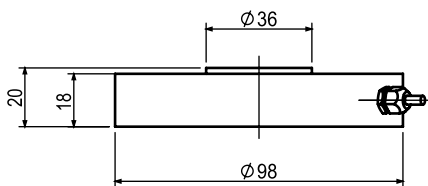
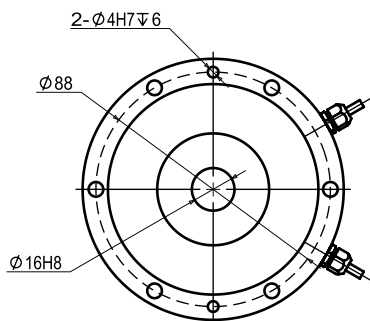
功能特点 Function Feature

- ◆ 压扭负荷力传感器
- ◆ 两信号互扰误差小
- ◆ 高度低, 易于安装
- ◆ 接受定制规格

接线图 Wiring



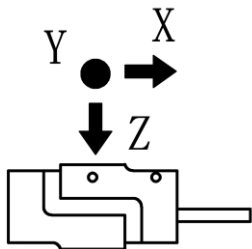
安装尺寸 Dimensions



FA702

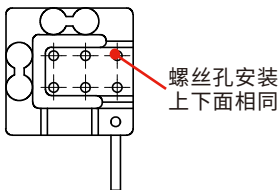
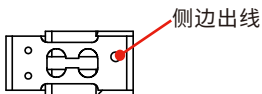
多维力传感器

受力方向 Load Direction

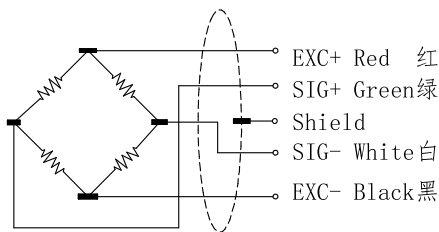


安装方式 Installation

● 多维力安装



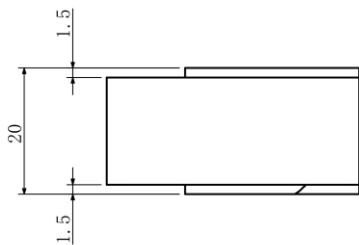
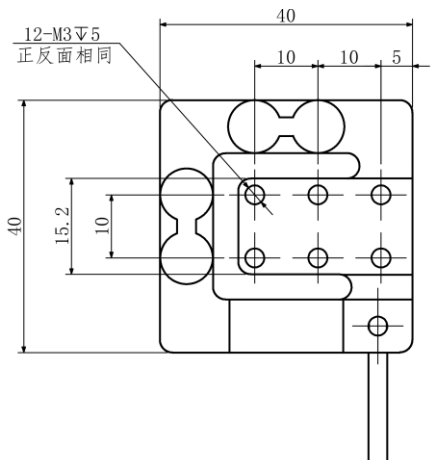
接线图 Wiring



技术参数 Specifications

传感器物理参数 Sensor Physical Parameters		
额定量程 Nominal Capacity	N	X:5/10/20/30/50N; Y:5/10/20/30/50N Z:5/10/20/30/50N
过载能力 Safe Overload	%	150
工作温度 Operating Temperature	°C	-20~75
防护等级 Ingress Protection (IP)	IP	65
电缆长度 Cable	M	φ2x3m
弹性体材料 Spring Element Material		铝合金
测量方向 Loading Direction		XYZ
传感器精度参数 Sensor Accuracy Parameters		
综合精度 Combined Error	%	≤0.2
线性误差 Non-linearity	%	≤0.2
相对滞后 Hysteresis	%	≤0.2
重复误差 Repeatability	%	≤0.2
互扰误差 Crosstalk	%	≤0.5
温度漂移 Temperature Effect on Output	%	0.1%/10°C
传感器电气参数 Electrical Parameters		
满量程输出 Rated Output	mV/V	≈1.0
激励电压 Excitation Voltage	V(DC)	5~12
绝缘电阻 Insulation Resistance	MΩ/VDC	≥5000/100

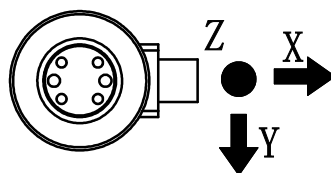
安装尺寸 Dimensions



FA703

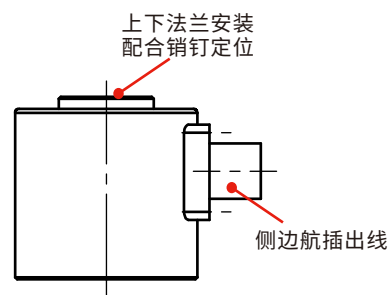


受力方向 Load Direction

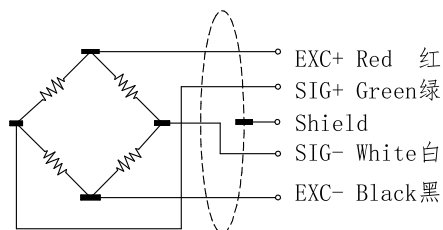


安装方式 Installation

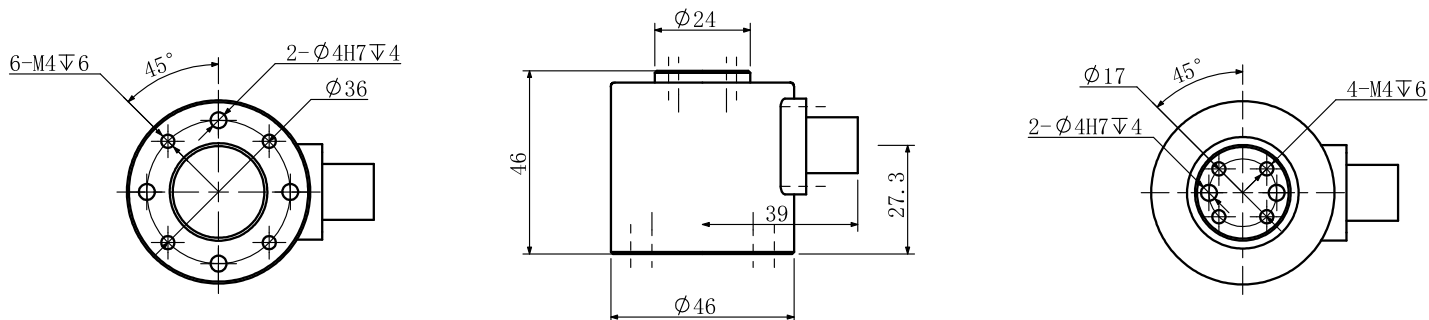
● 多维力安装



接线图 Wiring



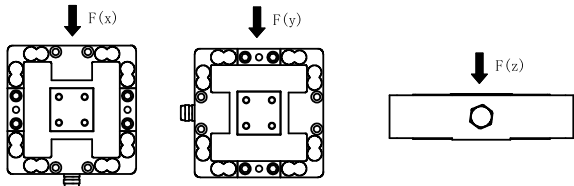
安装尺寸 Dimensions



FA704C

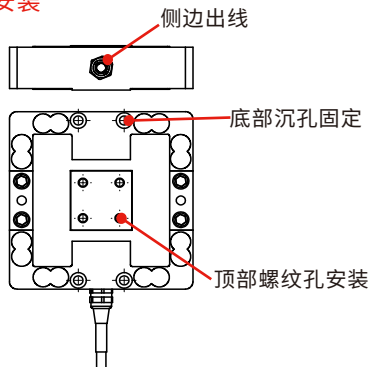
多维力传感器

受力方向 Load Direction

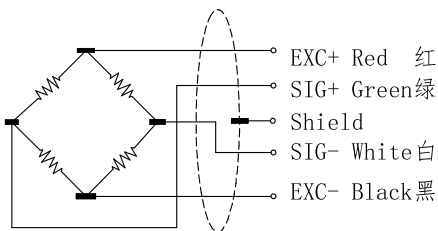


安装方式 Installation

● 多维力安装



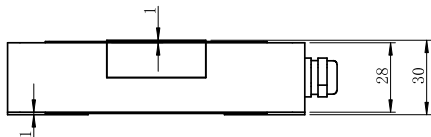
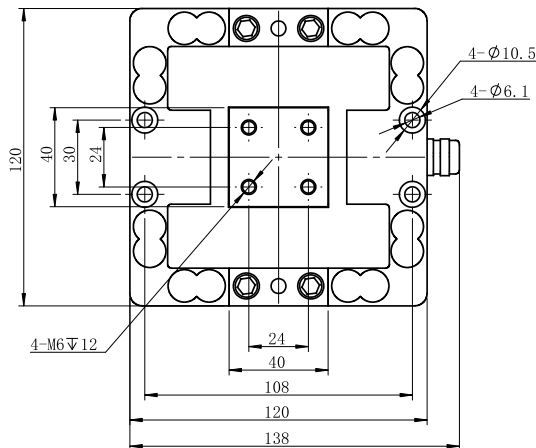
接线图 Wiring



技术参数 Specifications

传感器物理参数 Sensor Physical Parameters		
额定量程 Nominal Capacity	kg	X:50/100/200/300/500kg Y:50/100/200/300/500kg Z:50/100/200/300/500kg
过载能力 Safe Overload	%	150
工作温度 Operating Temperature	°C	-20~75
防护等级 Ingress Protection (IP)	IP	65
电缆长度 Cable	M	φ5x3m
弹性体材料 Spring Element Material		合金钢
测量方向 Loading Direction		XYZ
传感器精度参数 Sensor Accuracy Parameters		
综合精度 Combined Error	%	≤0.1
线性误差 Non-linearity	%	≤0.1
相对滞后 Hysteresis	%	≤0.1
重复误差 Repeatability	%	≤0.05
互扰误差 Crosstalk	%	≤0.3
温度漂移 Temperature Effect on Output	%	0.1%/10°C
传感器电气参数 Electrical Parameters		
满量程输出 Rated Output	mV/V	≈1.0±10%
激励电压 Excitation Voltage	V(DC)	5~12
绝缘电阻 Insulation Resistance	MΩ/VDC	≥5000/100

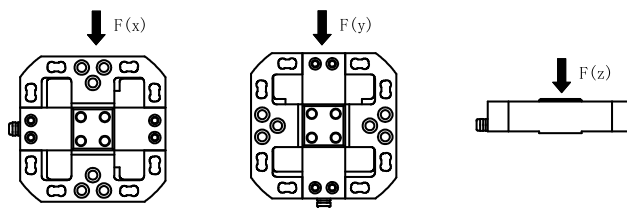
安装尺寸 Dimensions



FA704D



受力方向 Load Direction



技术参数 Specifications

传感器物理参数 Sensor Physical Parameters

额定量程 Nominal Capacity	t	X/Y/Z:5t
过载能力 Safe Overload	%	150
工作温度 Operating Temperature	°C	-20~75
防护等级 Ingress Protection (IP)	IP	65
电缆长度 Cable	M	3m
弹性体材料 Spring Element Material		不锈钢
测量方向 Loading Direction		XYZ

传感器精度参数 Sensor Accuracy Parameters

综合精度 Combined Error	%	≤0.3
线性误差 Non-linearity	%	≤0.3
相对滞后 Hysteresis	%	≤0.3
重复误差 Repeatability	%	≤0.2
互扰误差 Crosstalk	%	≤1
温度漂移 Temperature Effect on Output	%	0.1%/10°C

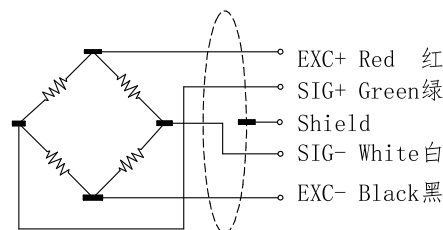
传感器电气参数 Electrical Parameters

满量程输出 Rated Output	mV/V	≈1.0±10%
激励电压 Excitation Voltage	V(DC)	5~12
绝缘电阻 Insulation Resistance	MΩ/VDC	≥5000/100

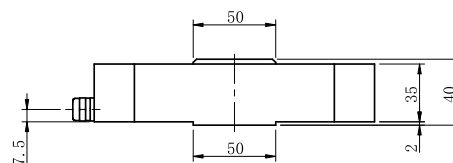
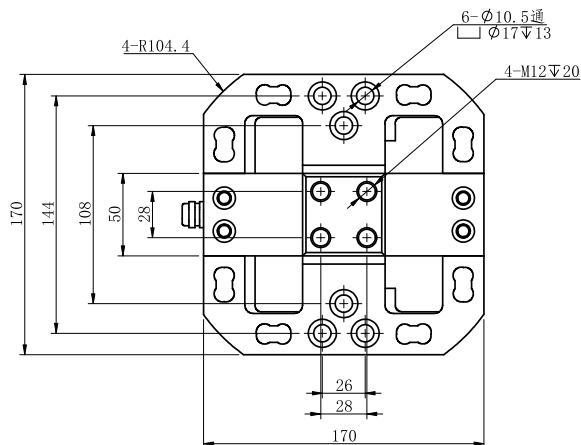
功能特点 Function Feature

- ◆ 三维力传感器,高速采样,高速动态响应,抗干扰,长期性能稳定,反应灵敏;
- ◆ 体积小,重量轻,能测量空间加速度,能充分准确地反映物体的运动性质。

接线图 Wiring



安装尺寸 Dimensions

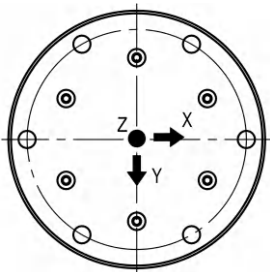


FA728

多维力传感器

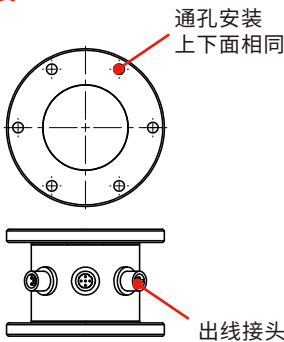


受力方向 Load Direction

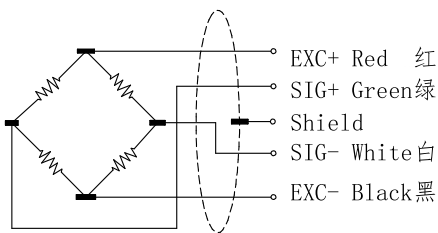


安装方式 Installation

● 静态扭矩安装



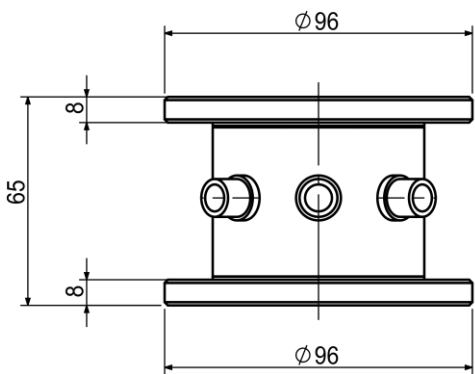
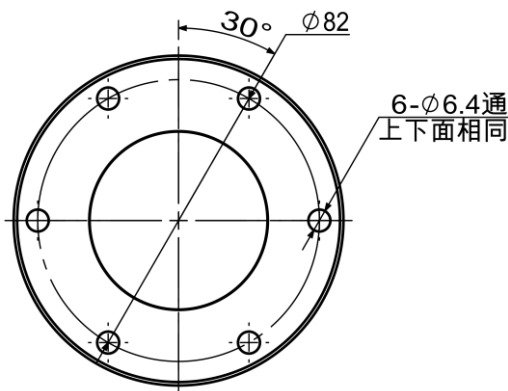
接线图 Wiring



技术参数 Specifications

传感器物理参数 Sensor Physical Parameters		
额定量程 Nominal Capacity	kg	X:50~300kg Y:50~300kg Z:50~300kg
过载能力 Safe Overload	%	150
工作温度 Operating Temperature	°C	-20~80
防护等级 Ingress Protection (IP)	IP	65
电缆长度 Cable	M	航插
弹性体材料 Spring Element Material		不锈钢
测量方向 Loading Direction		XYZ
传感器精度参数 Sensor Accuracy Parameters		
综合精度 Combined Error	%	≤0.05
线性误差 Non-linearity	%	≤0.05
相对滞后 Hysteresis	%	≤0.05
重复误差 Repeatability	%	≤0.05
互扰误差 Crosstalk	%	≤0.05
温度漂移 Temperature Effect on Output	%	0.1%/10°C
传感器电气参数 Electrical Parameters		
满量程输出 Rated Output	mV/V	1.0±10%
激励电压 Excitation Voltage	V(DC)	10
绝缘电阻 Insulation Resistance	MΩ/VDC	≥5000/100

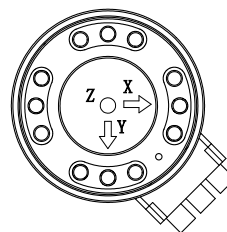
安装尺寸 Dimensions



FA731



受力方向 Load Direction



技术参数 Specifications

传感器物理参数 Sensor Physical Parameters

额定量程 Nominal Capacity	kN	FX/Y: 20kN FZ: 100kN
过载能力 Safe Overload	%	150
工作温度 Operating Temperature	°C	-20~80
防护等级 Ingress Protection (IP)	IP	65
电缆长度 Cable	M	φ5x3m
弹性体材料 Spring Element Material		不锈钢
测量方向 Loading Direction		XYZ

传感器精度参数 Sensor Accuracy Parameters

综合精度 Combined Error	%	≤0.3
线性误差 Non-linearity	%	≤0.1
相对滞后 Hysteresis	%	≤0.3
重复误差 Repeatability	%	≤0.1
互扰误差 Crosstalk	%	≤0.1
温度漂移 Temperature Effect on Output	%	0.1%/10°C

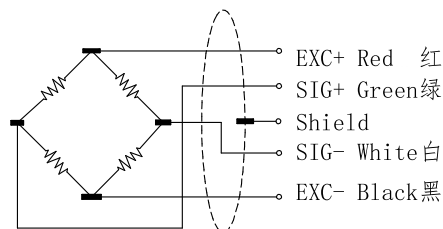
传感器电气参数 Electrical Parameters

满量程输出 Rated Output	mV/V	1.2±30%
激励电压 Excitation Voltage	V(DC)	10
绝缘电阻 Insulation Resistance	MΩ/VDC	≥5000/100

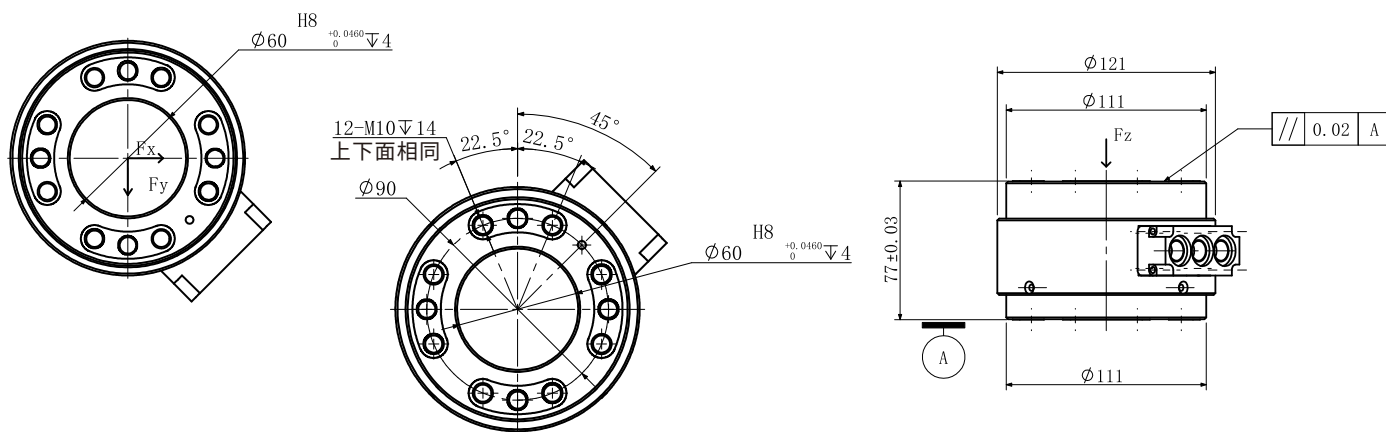
功能特点 Function Feature

- ◆ 三维力传感器,高速采样,高速动态响应,抗干扰,长期性能稳定,反应灵敏;
- ◆ 体积小,重量轻,能测量空间加速度,能充分准确地反映物体的运动性质。

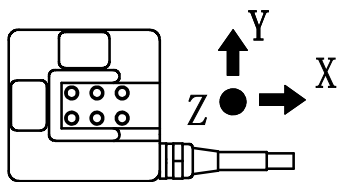
接线图 Wiring



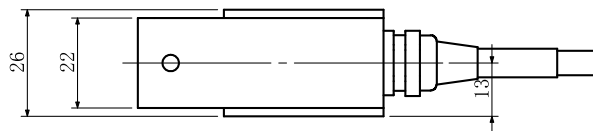
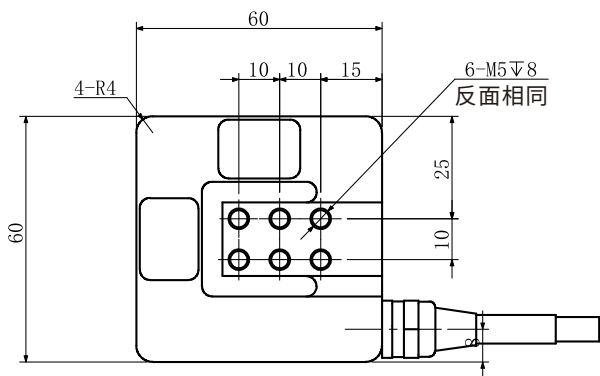
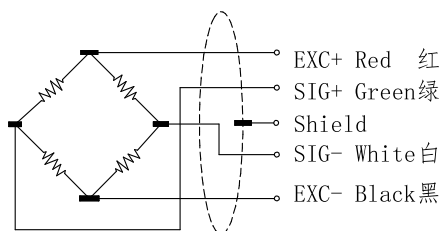
安装尺寸 Dimensions



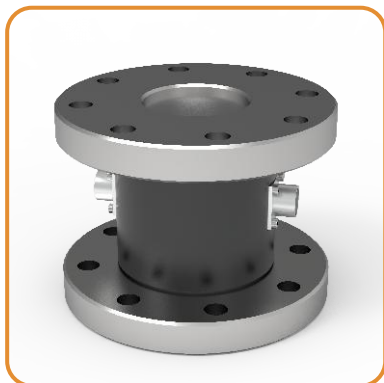
多维力传感器



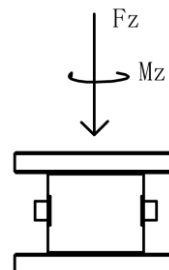
传感器物理参数 Sensor Physical Parameters		
额定量程 Nominal Capacity	kg	X/Y/Z:10,20,30,50kg
过载能力 Safe Overload	%	
工作温度 Operating Temperature	°C	
防护等级 Ingress Protection (IP)	IP	
电缆长度 Cable	M	
弹性体材料 Spring Element Material		不锈钢
测量方向 Loading Direction		XYZ
传感器精度参数 Sensor Accuracy Parameters		
综合精度 Combined Error	%	≤0.2
线性误差 Non-linearity	%	≤0.1
相对滞后 Hysteresis	%	≤0.2
重复误差 Repeatability	%	≤0.1
互扰误差 Crosstalk	%	≤0.1
温度漂移 Temperature Effect on Output	%	0.1%/10°C
传感器电气参数 Electrical Parameters		
满量程输出 Rated Output	mV/V	1.0±10%
激励电压 Excitation Voltage	V(DC)	5~12
绝缘电阻 Insulation Resistance	MΩ/VDC	≥5000/100



FA778-5600系列



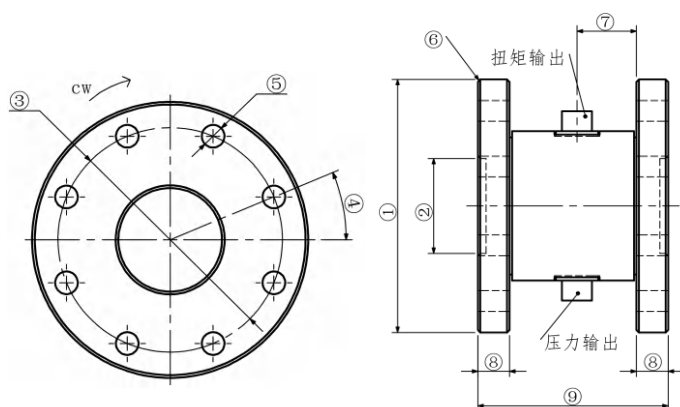
受力方向 Load Direction



技术参数 Specifications

型号 Model		5610	5611	5612	5613	5614
额定量程 Nominal Capacity	N.m/kN	MZ:560	MZ:2.2K	MZ:11K	MZ:22K	MZ:33K
		FZ:27	FZ:130	FZ:450	FZ:670	FZ:800
输出 Rated Output	mV/V	MZ:2	MZ:2	MZ:2	MZ:2	MZ:2
		FZ:0.25	FZ:0.5	FZ:0.5	FZ:0.5	FZ:0.5
非线性 Non-linearity	%F.S.	±0.1	±0.1	±0.1	±0.1	±0.1
滞后 Hysteresis	%F.S.	±0.1	±0.1	±0.1	±0.1	±0.1
重复性 Repeatability	%F.S.	±0.02	±0.02	±0.02	±0.02	±0.02
温漂 Temp. Coeff. of Sens.	%F.S./10°C	±0.05	±0.05	±0.05	±0.05	±0.05
零漂 Temp. Coeff. of Zero	%F.S./10°C	±0.05	±0.05	±0.05	±0.05	±0.05
电桥电阻 Input Resistance	Ω	350	350	350	350	350
激励电压 Excitation Voltage	VDC	5~20	5~20	5~20	5~20	5~20
温度补偿范围 Compensated Temp. Range	°C	-10~60	-10~60	-10~60	-10~60	-10~60
工作温度范围 Operating Temp. Range	°C	-20~80	-20~80	-20~80	-20~80	-20~80
安全过载 Safe Overload	%F.S.	±150	±150	±150	±150	±150
最大侧面载荷 Ultimate Overload	1bf	2K	7K	20K	30K	55K

安装尺寸 Dimensions

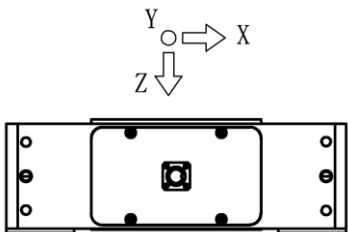


单位mm	5610	5611	5612	5613	5614
①	φ101.6	φ127.0	φ203.2	φ247.7	φ355.6
②	φ38.1 ^{+0.002} _{-0.000} 深度3.3 两头	φ50.8 ^{+0.005} _{-0.000} 深度6.4 两头	φ88.9 ^{+0.005} _{-0.000} 深度7.9 两头	φ101.6 ^{+0.005} _{-0.000} 深度7.9 两头	φ152.4 ^{+0.005} _{-0.000} 深度3.3 两头
③	φ82.55	φ107.95	φ165.1	φ203.2	φ279.4
④	22.5°	22.5°	22.5°	22.5°	15°
⑤	8xφ8.33通 两侧法兰相同	8xφ10 ^{+0.15} _{-0.08} 通 两侧法兰相同	8xφ16 ^{+0.15} _{-0.08} 通 两侧法兰相同	8xφ19.84通 两侧法兰相同	8xφ26.19通 两侧法兰相同
⑥	4x1.5x45°	4x1.5x45°	4x1.5x45°	4x1.5x45°	4x1.5x45°
⑦	23.8	23.8	63.5	63.5	88.9
⑧	12.7	19.1	38.1	38.1	76.2
⑨	76.2	88.9	187.5	215.9	317.5

FA779

多维力传感器

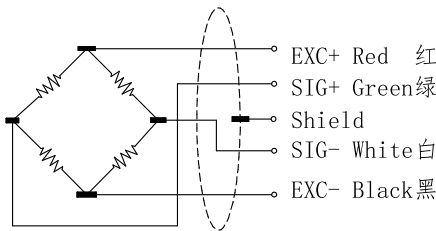
受力方向 Load Direction



功能特点 Function Feature

- ◆ 三维力传感器,高速采样,高速动态响应,抗干扰,长期性能稳定,反应灵敏;
- ◆ 体积小,重量轻,能测量空间加速度,能充分准确地反映物体的运动性质。

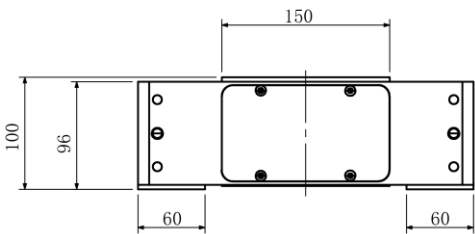
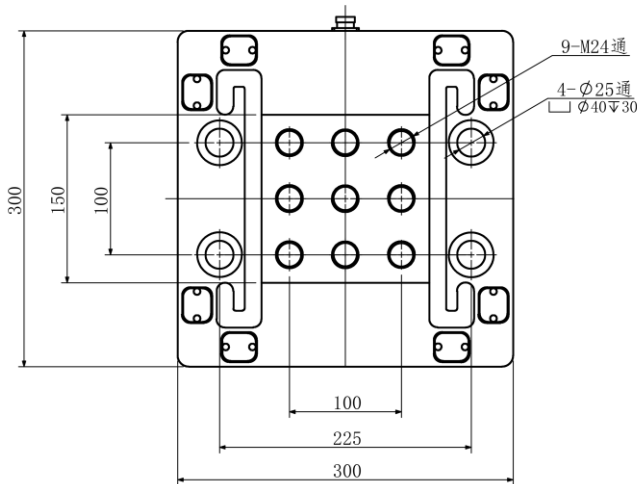
接线图 Wiring



技术参数 Specifications

传感器物理参数 Sensor Physical Parameters		
额定量程 Nominal Capacity	t	X/Y/Z:20t
过载能力 Safe Overload	%	120
工作温度 Operating Temperature	°C	-20~80
防护等级 Ingress Protection (IP)	IP	65
电缆长度 Cable	M	3m
弹性体材料 Spring Element Material		17-4PH
测量方向 Loading Direction		XYZ
传感器精度参数 Sensor Accuracy Parameters		
综合精度 Combined Error	%	±1
线性误差 Non-linearity	%	±1
相对滞后 Hysteresis	%	±1
重复误差 Repeatability	%	±1
互扰误差 Crosstalk	%	±0.1
温度漂移 Temperature Effect on Output	%	0.1%/10°C
传感器电气参数 Electrical Parameters		
满量程输出 Rated Output	mV/V	1.0±20%
激励电压 Excitation Voltage	V(DC)	5~12
绝缘电阻 Insulation Resistance	MΩ/VDC	≥5000/100

安装尺寸 Dimensions



FA7155系列



功能特点 Function Feature

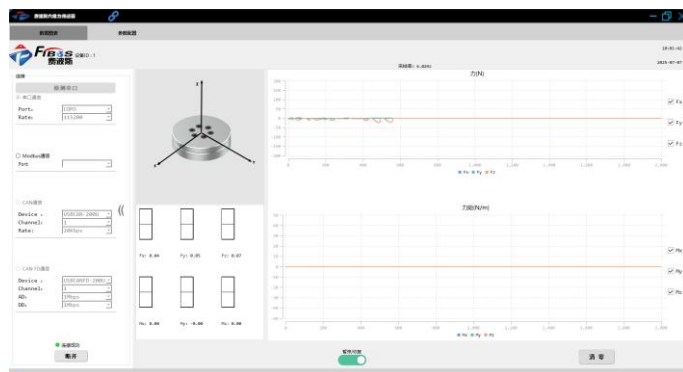
- ◆ 高信噪比采集系统
- ◆ 高强度机身, 耐久度好
- ◆ 接口丰富, 适用性广, 带软件
- ◆ 量程范围广, 超高强度

技术参数 Specifications

型号		FA7155A	FA7155B	FA7155C	FA7155D
Fx量程	N	150	200	300	400
Fy量程	N	150	200	300	400
Fz量程	N	150	200	300	400
Mx量程	Nm	5.5	7.5	13	20
My量程	Nm	5.5	7.5	13	20
Mz量程	Nm	5.5	7.5	13	20
直径	mm	75	75	75	75
高度	mm	31.5			
重量	kg	≤0.3			
材质		铝合金			
过载水平	%FS	300			
分辨率	%FS	0.03			
准度	%FS	0.5			
重复精度	%FS	0.1			
采样频率	Hz	500~1000可定制			
供电电压	VDC	12~48可定制			
通讯接口		RS485/CAN-FD/EtherCAT可定制			

产品软件 Product Software

- ◆ 实时传输
- ◆ 精准质心检测
- ◆ 数据显示



安装尺寸 Dimensions

