

# 规格

Specification

传感器类型 Sensor type	项目 Item	规格 Specification	备注 Remarks
扭矩传感器 Torque sensor	额定扭矩 Rated torque	与减速机容许最大扭矩相同 The same as that of the maximum allowable torque of the reducer	
	限制扭矩 Limited torque	与减速机紧急时最大扭矩相同 The same as the emergency stop torque of the reducer.	
	耐久性 Durability	与减速机相同 The same as that of the reducer	
	测量范围 (全量程) Measuring range(Full Scale)	取决于减速机尺寸 Determined by the size of the reducer	
	非线性 Non-linearity	±3%FS以下 ± 3% FS or less	达到额定扭矩的范围 Range to rated torque
	滞后 Hysteresis	3%FS以下 3% FS or less	达到额定扭矩的范围 Range to rated torque
	其他轴灵敏度 Cross-axis sensitivity	±1%FS以下 ± 1% FS or less	达到减速机容许力矩的范围 Range to allowable moment of reducer
	温度补偿 Temperature Compensation	±0.05FS/°C ±0.05FS/°C	使用内置温度传感器 Use the built-in temperature sensor
	分辨率 Resolution	12bit 12bit	范围: ±2000 Range: ±2000 LSB: 取决于减速机尺寸 LSB:Determined by the size of the reducer
	功能安全 Functional safety	PLd (类别 3) /ISO13849-1 PLd (Category 3) /ISO13849-1 SIL2 /IEC61508 SIL2 /IEC61508	筹备中 (计划在2024年取得认证) in preparation (Certification is expected in 2024.)
温度传感器 Temperature sensor	温度测量精度 Accuracy	±2°C ±2°C	T.B.D.
	测量范围 Measuring range	0°C ~ 80°C 0°C to 80°C	
	温度测量分辨率 Resolution	0 ~ 800bit 0 ~ 800bit	LSB: 0.1°C LSB: 0.1°C
常规 General	电源电压 Power supply voltage	DC24V+10%/-15% DC24V+10%/-15%	
	消耗电流 Consumption Current	0.1A以下 0.1A or less	T.B.D.
	通信方式 Communication method	RS-485 半双工 (双线式) RS-485 Half Duplex (2-wire)	
	波特率 Baud rate	3.0Mbps 3.0Mbps	
	使用温度范围 Operating temperature limit	0°C ~ 80°C 0°C to 80°C	
	保护等级 Protection grade	IP00 IP00	设置在IP54以上的环境中 Use with IP54 or better
	厚度 Thickness	WP-35, 42: 增加7mm、WP-50,63,80: 增加5mm WP-35, 42: 7mm up, WP-50,63,80: 5mm up	FLEX齿轮的护盖部延长 Extended flex gear cover section
	重量 Mass	和B2型的标准组合相同 The same as that of the Type B2 standard unit	
	对象机型 Target model	B2型、开放型、标准组合型 B2 type, Open type, Standard unit type	

**Nidec**  
**尼得科**

All for dreams

**Smart-FLEXWAVE**  
Built-in Multi Sensor

精密控制用减速机 FLEXWAVE WP 系列



**尼得科传动技术 (浙江) 有限公司**

**NIDEC DRIVE TECHNOLOGY (ZHEJIANG) CORPORATION**

浙江省平湖市经济开发区平成路1858号

Tel : 0573-8509-3022 Fax : 0573-8509-3543

邮编 : 314200

URL : <http://www.nidec-drivetechnology.com.cn>

230301-0.5CNV

**尼得科传动技术 (浙江) 有限公司**  
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颠覆以往常识!

# “全球首款”复合型传感器内置型

World's first 'Built-in Multi Sensor'

## Smart-FLEXWAVE 是什么

What is a 'Smart-Flexwave'?

### 一体结构内置 3 个传感器

3 Integrated Sensors built-in

扭矩传感器：检测输出扭矩

温度传感器：检测减速机内部温度

角度传感器：检测输入轴角度

Torque sensor: Detects output torque  
Temperature sensor: Detects the internal temperature of the reducer  
Angle sensor: Detects the angle at the input side

通过内置在现有空间，实现

- 超省空间
- 轻量
- 低价

By incorporating the sensor in an existing space, it is ultra-space saving, reduces weight, and reduces price!

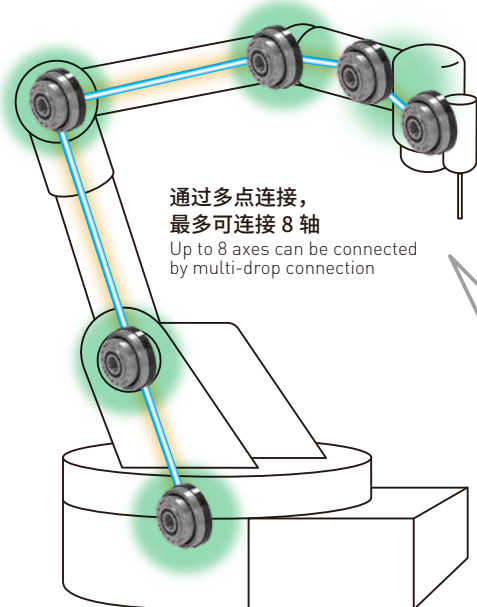


## 协作机器人专用双系统

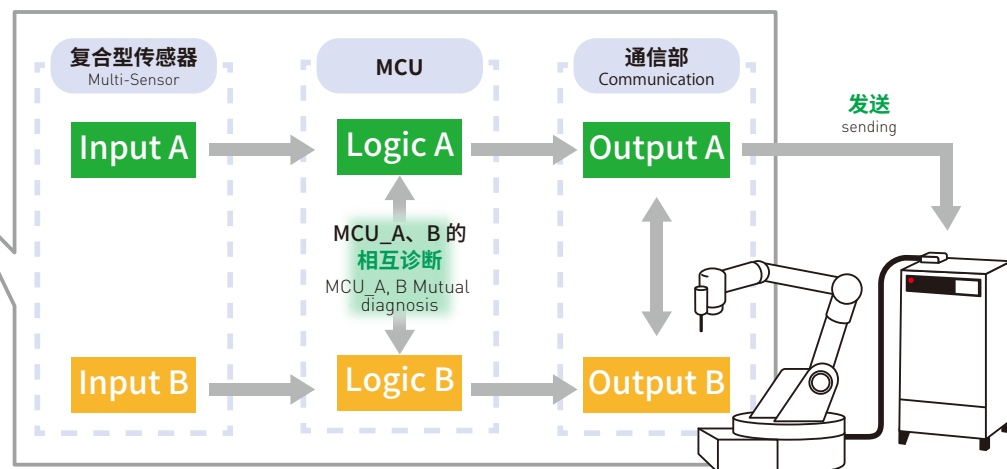
Dual system for cooperative robots.

- 搭载双系统的复合型传感器，确保协作机器人的安全。

Equipped with two systems of multi-sensors to ensure the safety required for cooperative robots.



通过多点连接，最多可连接 8 轴  
Up to 8 axes can be connected by multi-drop connection



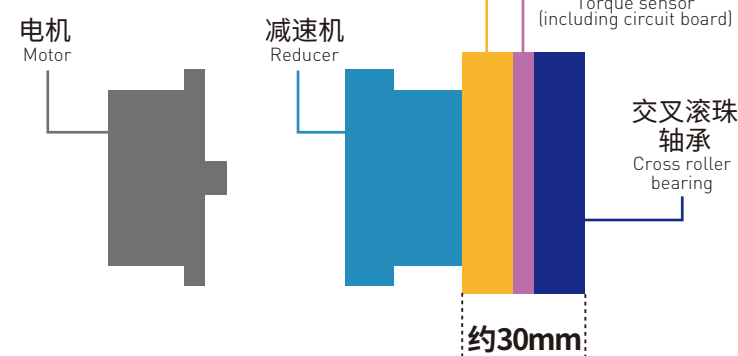
# Smart-FLEXWAVE

## 与以往产品比较

Comparison with conventional products

### 以往的外置扭矩传感器

Conventional external type torque sensor



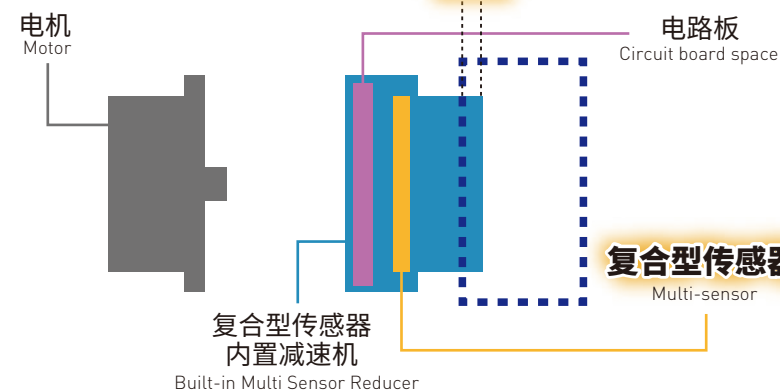
笨重=对机器人的影响大  
Big and heavy = Large effect on the robot

- 价格昂贵
- 刚性低 (需要交叉滚珠轴承)
- Expensive
- Reduced rigidity (cross roller bearing required)

梦的技术  
内置复合型传感器!  
Dream technology  
Built-in Multi Sensor

### 复合型传感器内置减速机

Built-in Multi Sensor Reducer



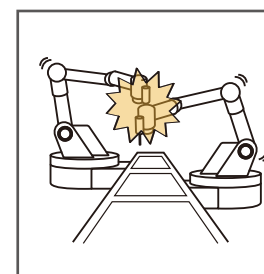
轻量 × 省空间  
= 竞争优势提升!  
Light weight × Space Saving  
= Competitive advantage UP!

- 价格低
- 不降低刚性
- 受其他轴的影响小

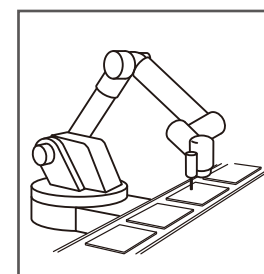
- Economical
- No decrease in rigidity
- Low influence of crossed axes

## 机器人用途应用

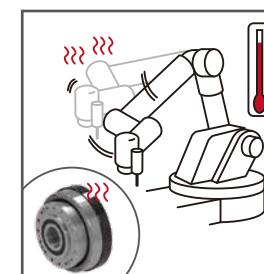
Robot application



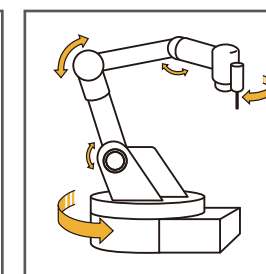
碰撞检测、过载监视  
Collision detection / Overload monitoring



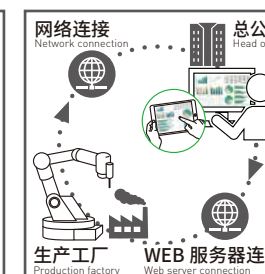
螺丝紧固扭矩监视  
Monitoring torque for screw tightening



机械臂热影响修正  
过热监视  
Arm heat effect compensation /  
Overheat monitoring



机器人停止位置  
角度监视 ※需要咨询  
Robot stop position / Angle monitoring  
※Please consult with us.



网络监控系统  
Network monitoring system