

# 90M31A

## SENSOR OVERVIEW

The 90M31 is a member of the **JR3** family of six axis force and torque transducers with internal electronics. It is 90mm in diameter and 31mm thick. The ISO50mm variant uses the mechanical interface specified by the International Standard ISO 9409-1 -A 50, other variants match specific industrial robots.

The 90M31 has signal conditioning electronics integrated into the sensor body. Included in the electronics are amplifiers, an analog to digital converter, an EEPROM containing calibration data and RS-485 serial drivers. The 90M31 outputs a 2 megabit per second serial data stream which contains complete 6 axis data at 8 kHz and can be read by any of **JR3's** serial receivers.

The 90M31 is machined from a solid billet of aluminum. The resulting monolithic structure produces a transducer with unsurpassed hysteresis and precision properties. The 90M31 uses metal foil strain gages bonded to strain rings as the sensing element. This produces linearity, and thermal performance superior to other strain sensing technologies and geometries. The mechanical structure of the 90M31 also produces a transducer with exceptional stiffness.

As can be seen on the interface drawing, the 90M31 has captive bolts which allow direct connection to the user's tool flange. The top of the transducer contains a copy of the tool flange. This feature eliminates the need for adapter plates, which saves weight and lowers the installed height.

The 90M31 can interface to a variety of receiver electronics. **JR3** has DSP-based receiver electronics available for several industry standard computer busses. These receivers are able to process the force and moment data at the full 8 kHz data rate. They provide decoupling, coordinate transformation, low-pass filtering, vector calculation, threshold monitoring, peak capture and rate calculations.



**JR3 Model NO. 90M31A-150**

### Capacities, Resolutions, Stiffnesses and Permissible Single Axis Overloads:

#### 25 lb Model:

Fx, Fy	Fz		Mx, My	Mz	
25	50	lbs	90	90	in-lbs
100	200	N	10	10	N-m
0.01	0.02	lbs	0.03	0.03	in-lbs
23	230	klbs/in	270	70	kin-lbs/rad
130	530	lbs	410	320	in-lbs

#### 50 lb Model:

Fx, Fy	Fz		Mx, My	Mz	
50	100	lbs	180	180	in-lbs
200	400	N	20	20	N-m
0.02	0.04	lbs	0.06	0.06	in-lbs
40	410	klbs/in	490	140	kin-lbs/rad
205	900	lbs	700	580	in-lbs

#### Weight:

0.8 lb (365 g)

#### Available interfaces (bolt patterns) for 90M31:

ISO50mm, Sankyo 55 mm

**JR3, Inc. has been designing and manufacturing six axis loadcells since 1983. We have manufactured six axis loadcells ranging in diameter from 2 to 13 inches, and with load capacities from 2 to 25,000 lbs and 0.25 to 22,000 ft-lbs. Please feel free to call our applications engineers to discuss your particular needs.**