

## Precision XY Motion Platform

### FEATURES

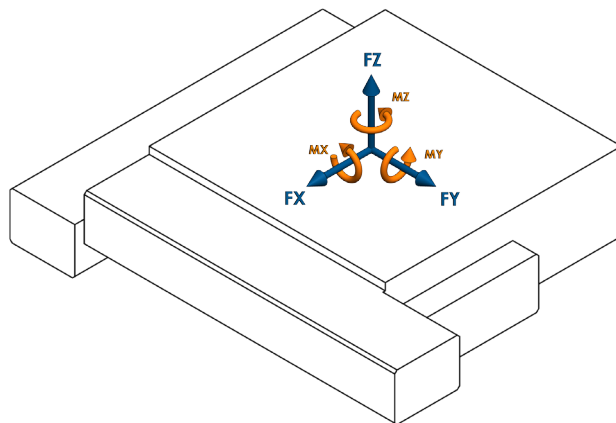
- Compact Low-Profile Design
- 100mm XY Travel
- Zero backlash, precision ground ball screws
- Optical limit switches
- High resolution linear encoder
- Brushless servo motor drive
- Crossed Roller Bearings



The CXY-BS series stages are designed for a variety of applications. This compact low profile ball screw stage is built for high duty cycles and long life and can attain high velocities for factory automation and semiconductor processing equipment. The CXY series offers extraordinary levels of orthogonality and parallelism resulting in high accuracy for combined axis motion. Crossed roller bearings and precision ground ball screws offer extremely smooth operation and velocity control. The XY stage can operate in any orientation and has optional brakes for added safety.

## Product Specifications

|   |                 |
|---|-----------------|
| Encoder Output                                | A quad B, index |
| Force X/Y, Continuous (N)                     | 165             |
| Force X/Y, Peak (N)                           | 330             |
| Force Z (N)                                   | 400             |
| Flatness ( $\mu\text{m}$ )                    | 3               |
| Height (mm)                                   | 66              |
| Length (mm)                                   | 297             |
| Limit Switches                                | Yes             |
| Linear Accuracy, Calibrated ( $\mu\text{m}$ ) | 1*              |
| Linear Accuracy, Mechanical ( $\mu\text{m}$ ) | 4               |
| Linear Encoder Resolution ( $\mu\text{m}$ )   | 0.1             |
| Linear Repeatability ( $\mu\text{m}$ )        | 0.5             |
| Linear Velocity (mm/s)                        | 140             |
| Moment X (N-m)                                | 80              |
| Moment Y (N-m)                                | 80              |
| Moment Z (N-m)                                | 50              |
| Moving Mass X (kg)                            | 5.88            |
| Moving Mass Y (kg)                            | 2.32            |
| Orthogonality (arc-sec)                       | 5               |
| Pitch +/- (arc-sec)                           | 8               |
| Screw Lead (mm)                               | 2               |
| Stage Mass (kg)                               | 9.35            |
| Straightness ( $\mu\text{m}$ )                | 3               |
| Width (mm)                                    | 259             |
| Yaw +/- (arc-sec)                             | 4               |
| *Subject to control configuration             |                 |



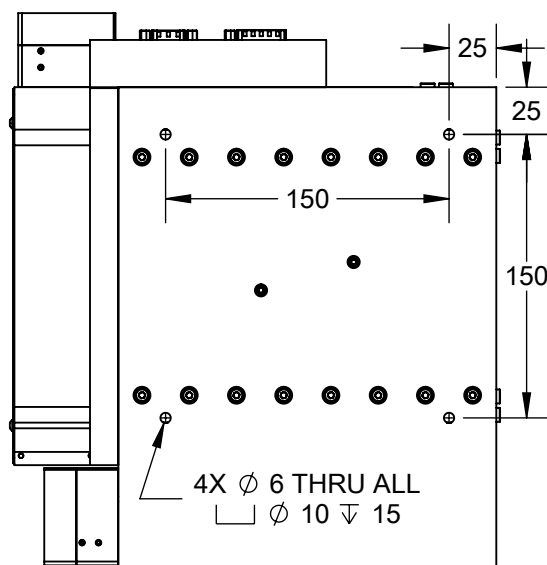
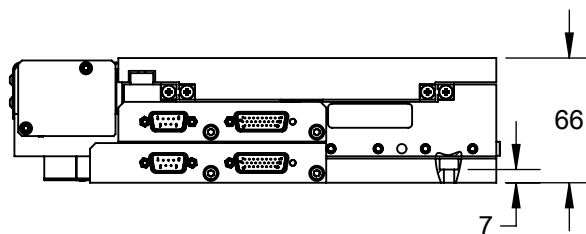
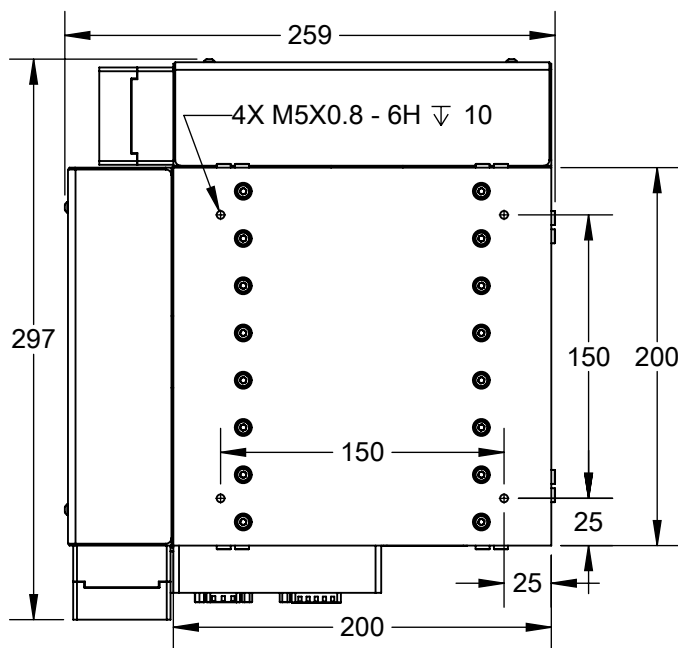
**LOAD DIRECTIONS**

## Part Number Description

|     |                                       |
|-----|---------------------------------------|
| CXY | CXY Series                            |
| C   | No Aperture                           |
| 100 | 100mm Travel                          |
| BS  | Ball Screw Drive                      |
| A   | Brushless Servo Motor                 |
| M   | 0.1 $\mu\text{m}$ Linear SS Scale     |
| P   | High Precision                        |
| 0   | No Additional Options                 |
| 00  | Standard Product<br>(Call for custom) |

CXY-C-100-BS-A-M-P-0-00

## Mechanical Specifications



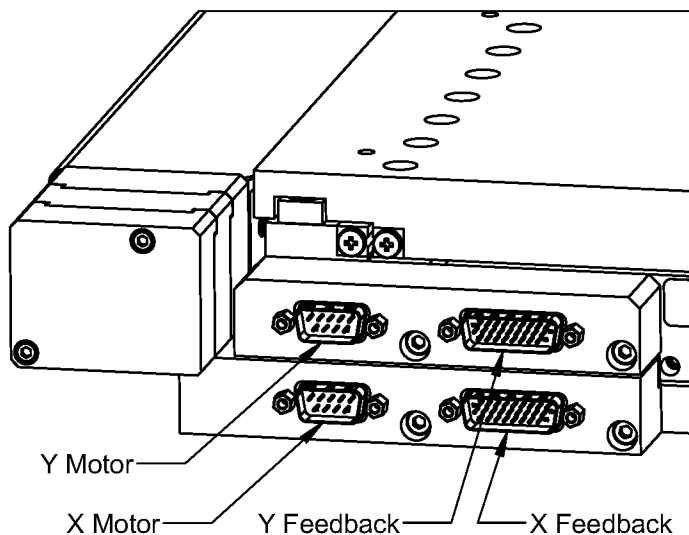
CXY-C-100-BS-A-M-P-0-00

Rev 10

**CXY-C-100-BS-A-M-P-0-00**

**Electrical Pinout**

| Feedback Connector<br>(DSUB26HD MALE) |        |
|---------------------------------------|--------|
| PIN                                   | NAME   |
| 1                                     | +5Vdc  |
| 2                                     | A+     |
| 3                                     | B+     |
| 4                                     | Z+     |
| 5                                     | LIM+   |
| 6                                     | *      |
| 7                                     | *      |
| 8                                     | *      |
| 9                                     | *      |
| 10                                    | *      |
| 11                                    | A-     |
| 12                                    | B-     |
| 13                                    | Z-     |
| 14                                    | LIM-   |
| 15                                    | *      |
| 16                                    | *      |
| 17                                    | *      |
| 18                                    | *      |
| 19                                    | GND    |
| 20                                    | HALL A |
| 21                                    | HALL B |
| 22                                    | HALL C |
| 23                                    | *      |
| 24                                    | *      |
| 25                                    | *      |
| 26                                    | *      |
| *Reserved                             |        |



| Motor Connector<br>(DSUB9 MALE) |         |
|---------------------------------|---------|
| PIN                             | NAME    |
| 1                               | PE      |
| 2                               | *       |
| 3                               | *       |
| 4                               | *       |
| 5                               | *       |
| 6                               | PHASE A |
| 7                               | PHASE B |
| 8                               | PHASE C |
| 9                               | *       |
| *Reserved                       |         |



CXY-C-100-BS-A-M-P-0-00

## Encoder Output

| Motor Specifications                       |                      |
|--|----------------------|
| Motor Type                                 | 3 phase brushless DC |
| BEMF Output (V/Krpm)                       | 2.57                 |
| Electrical Time Constant (msec)            | 0.38                 |
| Bus Voltage (Vdc)                          | 24 nominal (100 max) |
| Max Continuous Current (A <sub>pk</sub> )  | 3.36                 |
| Motor Force Constant (Nm/A <sub>pk</sub> ) | 0.0216               |
| Peak Current (A <sub>pk</sub> )            | 6.73                 |
| Pin to Pin Inductance (mH)                 | 0.55                 |
| Pin to Pin Resistance (ohm)                | 1.51                 |
| Poles Per Revolution                       | 6                    |

| Feedback Specifications          |   |
|----------------------------------|---|
| Supply Voltage (Vdc)             | 5.0 ± 10%   |
| Supply Current (mA)              | 250   |
| Encoder Feedback                 | Yes   |
| Encoder Type                     | Incremental   |
| Encoder Output                   | Square Wave Quadrature, RS-422 compatible, A,B,Z, Differential Pair |
| Encoder Resolution               | 10000 cts/mm  |
| Hall Switches                    | Yes   |
| Hall Switch Output Type          | Open-collector, no internal pullup resistor                         |
| Hall Switch max current (mA)     | -20   |
| Limit Switches                   | Yes   |
| Limits Switch Output Type        | Open-collector, no internal pullup resistor                         |
| Limit Switch Output current (mA) | -20   |

The encoder will output one index pulse near center travel. This pulse is highly repeatable and can be used upon power-up to find an absolute position to use for further measurements.

Two limit switches are provided at the ends of travel. The limit switches will be pulled low throughout the travel range of the stage. The output will swing to high-impedance at the end of travel and remain high-impedance until the mechanical limit of the stage is reached.