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**ASSEMBLY NOTES**

1. **Metal Motor Ring** should be mounted flush and tightly fastened to motor face with bolts provided.

2. Sensor housing should be fully inserted and tightly seated into mounted motor ring. If mounting holes of sensor housing and motor ring don't align properly, rotate sensor housing 180° and reinstall.) Place gasket on top motor ring when properly installed.

3. 60 Tooth Gear to be mounted on motor shaft with the front face of the 60 tooth gear aligned with the front face of the sensor housing. Secure 60 tooth gear location with set screws provided. See Figure #5. Front hub of 60 tooth gear will protrude approximately .020 beyond front face of the motor ring when properly installed.

**APPLICATION NOTES**

⚠️ Long mounting bolts to be used in multiple ring applications.

⚠️ In applications where conduit box is not required, shorter screws are necessary to properly secure sensor housing into the motor ring.
ASSEMBLY NOTES

1. METAL MOTOR RING SHOULD BE MOUNTED FLUSH AND TIGHTLY FASTENED TO MOTOR FACE WITH BOLTS PROVIDED.

2. PLACE GASKET ON TOP OF SENSOR HOUSING WITH WIRES OF SENSOR THRU CENTER SLOT OF GASKET. SENSOR HOUSING SHOULD BE FULLY INSERTED AND TIGHTLY SEATED INTO MOUNTED MOTOR RING (IF MOUNTING HOLES OF SENSOR HOUSING DON'T ALIGN PROPERLY, ROTATE SENSOR HOUSING 180° AND REINSTALL). INSERT SPACER WITH HOLES IN ALIGNMENT WITH SENSOR MOUNTING HOLES, ROUTING WIRES THRU CENTER SLOT. CONDUIT BOX TO BE SECURED WITH (2) #8-32 x 3.0 LONG SCREWS.

3. 60 TOOTH GEAR TO BE MOUNTED ON MOTOR SHAFT WITH THE FRONT FACE OF THE 60 TOOTH GEAR ALIGNED WITH THE FRONT FACE OF THE SENSOR HOUSING. SECURE 60 TOOTH GEAR LOCATION WITH SET SCREWS PROVIDED (SEE FIGURE 5).

APPLICATION NOTES

1. LONG MOUNTING BOLTS TO BE USED IN MULTIPLE RING APPLICATIONS.

2. IN APPLICATIONS WHERE CONDUIT BOX IS NOT REQUIRED, SHORTER SCREWS ARE NECESSARY TO PROPERLY SECURE SENSOR HOUSING INTO THE MOTOR RING.
1. Metal motor ring should be mounted flush and tightly fastened to motor face with bolts provided.

2. Sensor housing should be fully inserted and tightly seated into mounted motor ring (if mounting holes of sensor housing and motor ring don’t align properly rotate sensor housing 180° and reinstall.) Place gasket on top sensor housing with wires of sensor thru center slot of gasket. Conduit box to be secured with (2) M4 x 35 mm LG screws.

3. 60 tooth gear to be mounted on motor shaft with the front face of the 60 tooth gear aligned with the front face of the sensor housing. Secure 60 tooth gear location with set screws provided, see figure 5. Front hub of 60 tooth gear will protrude approximately .020 (~.5 mm) beyond front face of the motor ring when properly installed.

Application Notes

1. Longer mounting bolts may be needed in multiple ring applications.

2. In applications where conduit box is not required, shorter screws are necessary to properly secure sensor housing into the motor ring.
Differential

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-minimum res spec

Ityp 20 mA/Imax 35 mA @ 5 V
Zero speed to 10,000 RPM (Shaft Speed)
60 cycles each channel

Ityp 25 mA/Imax 45 mA @ 12 V

Ityp 30 mA/Imax 50 mA @ 15 V

Ityp 35 mA/Imax 60 mA @ 24 V

250 mA per channel continuous (Quad Only)

Supply Voltage (Vcc):
5 to 24 VDC ± 5%

Supply current:
- Typ 20 mA/Max 35 mA @ 5 V
- Typ 25 mA/Max 45 mA @ 12 V
- Typ 30 mA/Max 50 mA @ 15 V
- Typ 35 mA/Max 60 mA @ 24 V

Switching Frequency Limit:
100 kHz

Output Drive Capability:
- Low 1.6 mA @ 5 V
- Low 4 mA @ 12 V
- Low 5 mA @ 15 V
- Low 8 mA @ 24 V

Minimum Resistance for External Pull Up Resistor:
- 20 Ohms @ 5 V
- 50 Ohms @ 12 V
- 60 Ohms @ 15 V
- 100 Ohms @ 24 V

Electrical connections

Supply Voltage
Optional Pullup Resistor
See Minimum Res Spec
Channel Output
(A B)
Supply/Signal Gnd

Output Channel Schematic

Phase relationship for CCW Shaft Rotation

Output Channel Waveforms

Sensor Housing Dimensions

90 deg
A
B
A
B

Supply Voltage
Optional Pullup Resistor
See Minimum Res Spec
Channel Output (A B)
Supply/Signal Gnd

Output Channel Schematic

Specifications
Cycles Per Revolution:
60 Cycles Each Channel
Sensing Speed Range:
Zero Speed to 10,000 RPM (Shaft Speed)
Gap Adjustment:
None Required
Operating Temperature:
-40° to 125° C
Supply Voltage (VCC):
5 to 24 VDC ± 5%
Supply Current:
- Typ 20 mA/Max 35 mA @ 5 V
- Typ 25 mA/Max 45 mA @ 12 V
- Typ 30 mA/Max 50 mA @ 15 V
- Typ 35 mA/Max 60 mA @ 24 V
Switching Frequency Limit:
100 kHz
Output Drive Capability:
- Low 1.6 mA @ 5 V
- Low 4 mA @ 12 V
- Low 5 mA @ 15 V
- Low 8 mA @ 24 V
Minimum Resistance for External Pull Up Resistor:
- 20 Ohms @ 5 V
- 50 Ohms @ 12 V
- 60 Ohms @ 15 V
- 100 Ohms @ 24 V
Differential

CX-1010

Frequency Inputs

+12V AUX

J5

RED

RED

BLU

WHT/BLU

WHT/BRN

BRN

BLK

WHT/BRN

WHT/BLU

WHT/BRN

BRN

BLK

M-Track/M-Rotary/M-Cut/M-Shuttle/M-Traversal

+12V AUX

J3

RED

RED

BLU

WHT/BLU

WHT/BRN

NC WHT/BLU

NC WHT/BLU

NC BRN

NC BRN

BLK

WHT/BRN

WHT/BRN

NC BRN

NC BRN

BLK

Contrex, Inc.
SK1679 Rev 2
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CONNECT SHIELDS TO EARTH GROUND ONLY AT ONE END OF CABLE TO POWER THE DIFFERENTIAL QUAD SENSOR. SHIELDED CABLE IS RECOMMENDED.

NOTE:

THE +5V/+12V AUXILIARY POWER SUPPLY PROVIDED FROM THE CONTROL, SHOULD BE USED TO POWER THE DIFFERENTIAL QUAD SENSOR. SHIELDED CABLE IS RECOMMENDED. CONNECT SHIELDS TO EARTH GROUND ONLY AT ONE END OF CABLE.
DIFFERENTIAL

ML-TRIM

ML-DRIVE
NOTE:

THE +5V/+12V AUXILIARY POWER SUPPLY PROVIDED FROM THE CONTROL, SHOULD BE USED TO POWER THE DIFFERENTIAL QUAD SENSOR. SHIELDED CABLE IS RECOMMENDED. CONNECT SHIELDS TO EARTH GROUND ONLY AT ONE END OF CABLE.