



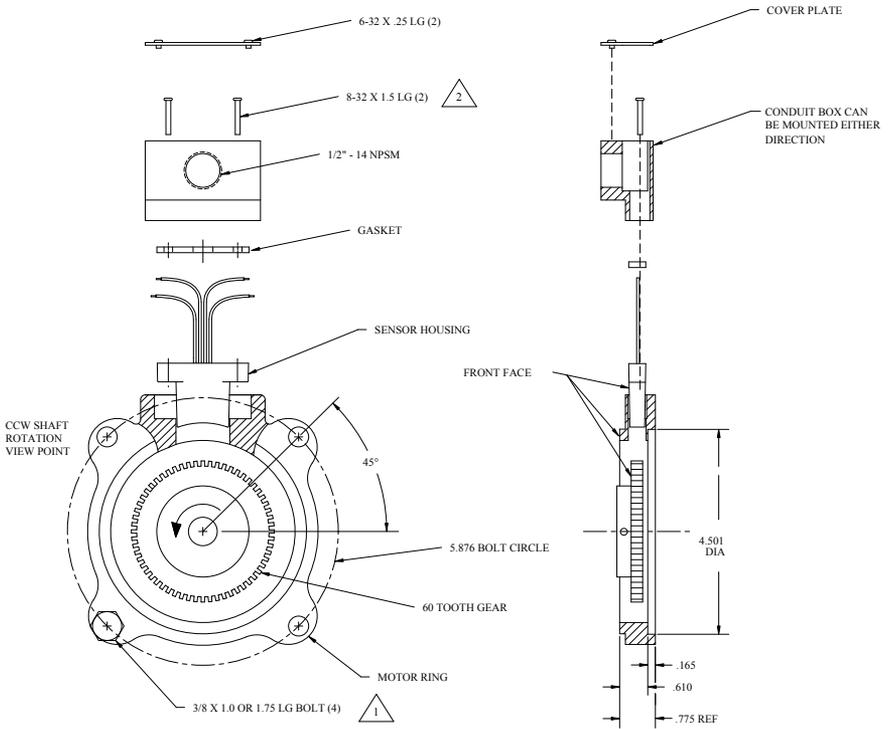
**QUAD RING KIT II SENSORS
INSTALLATION/SPECIFICATION/WIRING GUIDE
5 - 24 VOLT OPEN COLLECTOR**

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RINGS 56C & 143TC



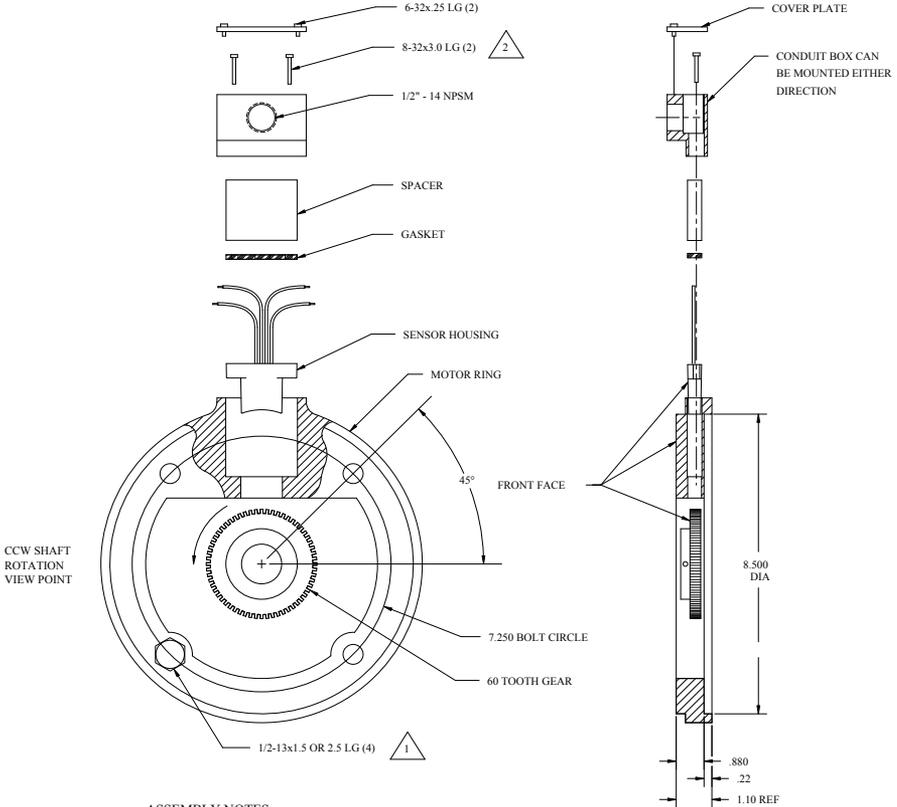
ASSEMBLY NOTES

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 SENSOR HOUSING WITH WIRES OF SENSOR THRU CENTER SLOT OF GASKET. CONDUIT BOX TO BE SECURED WITH (2) 8-32 X 1 1/2 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 BEYOND FRONT FACE OF THE MOTOR RING WHEN PROPERLY INSTALLED.

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.

RINGS 182TC, 213TC & 254TC



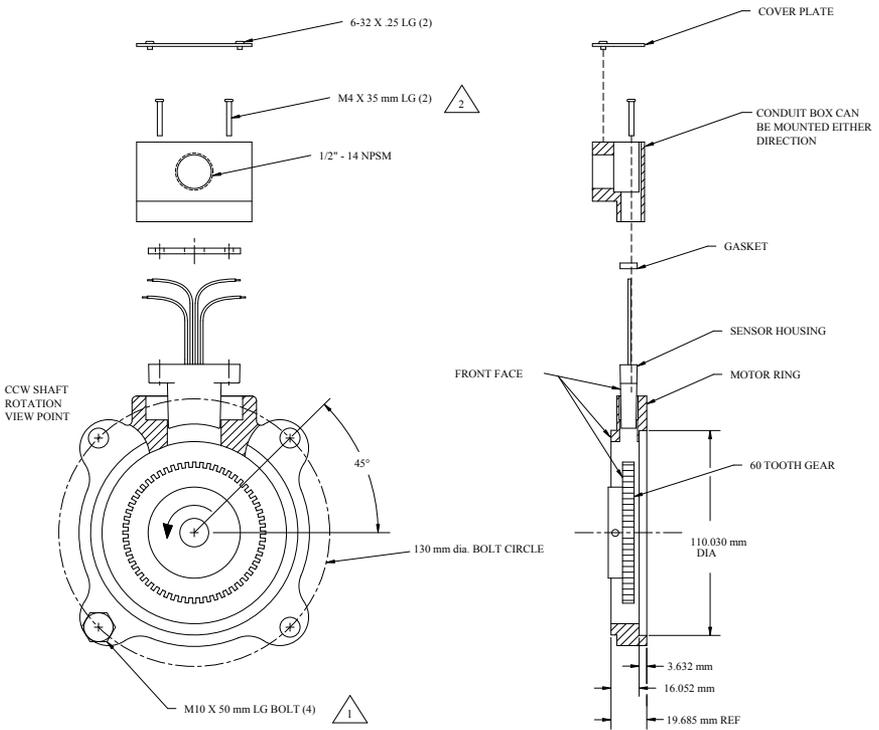
ASSEMBLY NOTES

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) #8-32x3.0 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.

RING 71D



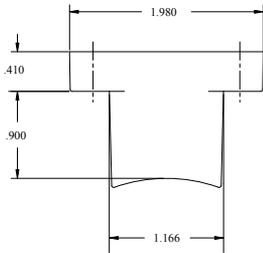
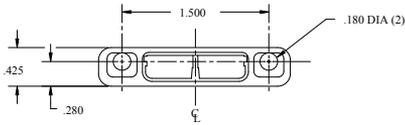
ASSEMBLY NOTES

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 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.

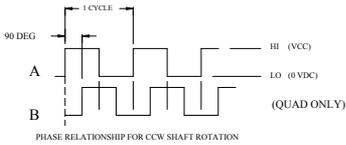
APPLICATION NOTES

- 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.

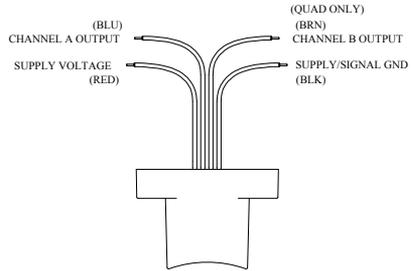
OPEN COLLECTOR WITH PULLUP



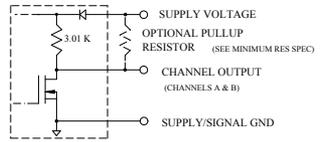
SENSOR HOUSING DIMENSIONS



OUTPUT CHANNEL WAVEFORMS



ELECTRICAL CONNECTIONS

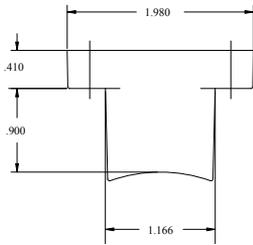
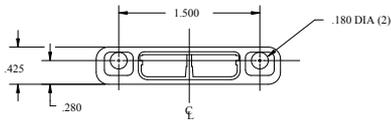


OUTPUT CHANNEL SCHEMATIC

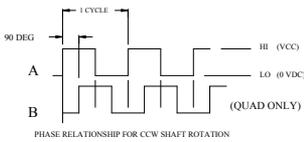
SPECIFICATIONS

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:	I _{typ} 20 mA / I _{max} 35 mA @ 5 V I _{typ} 25 mA / I _{max} 45 mA @ 12 V I _{typ} 30 mA / I _{max} 50 mA @ 15 V I _{typ} 35 mA / I _{max} 60 mA @ 24 V
SWITCHING FREQUENCY LIMIT:	100 kHz
OUTPUT DRIVE CAPABILITY:	250 mA PER CHANNEL CONTINUOUS I _{out} 1.6 mA @ 5 V I _{out} 4 mA @ 12 V I _{out} 5 mA @ 15 V I _{out} 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

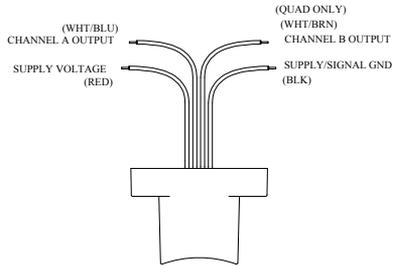
OPEN-COLLECTOR WITHOUT PULLUPS



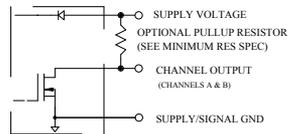
SENSOR HOUSING DIMENSIONS



OUTPUT CHANNEL WAVEFORMS



ELECTRICAL CONNECTIONS



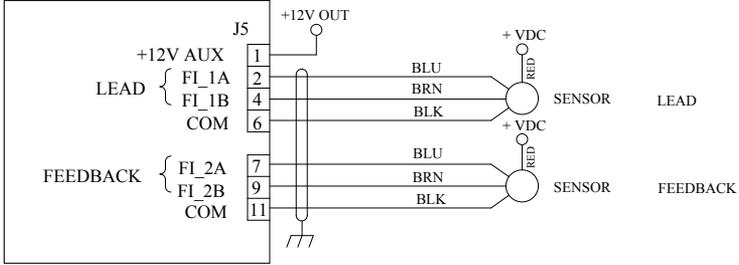
OUTPUT CHANNEL SCHEMATIC

SPECIFICATIONS

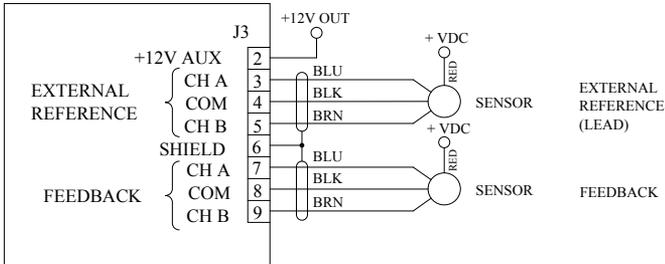
CYCLES PER REVOLUTION:	60 CYCLES EACH CHANNEL
SENSING SPEED RANGE:	ZERO SPEED TO 10,000 RPM (SHAFT SPEED)
GAP ADJUSTMENT:	NONE REQUIRED
OPERATING TEMPERATURE:	-40° to 125° C
SUPPLY VOLTAGE (VCC):	5 TO 24 VDC ± 5%
SUPPLY CURRENT:	I _{typ} 20mA/I _{max} 25mA @ 5V I _{typ} 25mA/I _{max} 45mA @ 12V I _{typ} 30mA/I _{max} 50mA @ 15V I _{typ} 35mA/I _{max} 60mA @ 24V
SWITCHING FREQUENCY LIMIT:	100 kHz
OUTPUT DRIVE CAPABILITY:	250 mA PER CHANNEL CONTINUOUS I _{out} 1.6 mA @ 5 V I _{out} 4 mA @ 12 V I _{out} 5 mA @ 15 V I _{out} 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
OUTPUT TRANSISTOR VCE:	30V MAXIMUM

OPEN COLLECTOR WITH PULLUPS

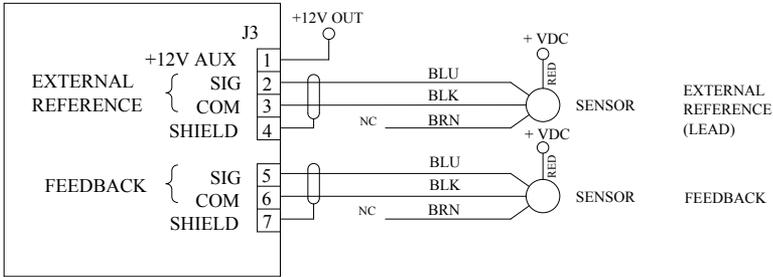
CX-1010



M-TRACK/M-ROTARY/M-CUT/M-SHUTTLE/M-TRAVERSE



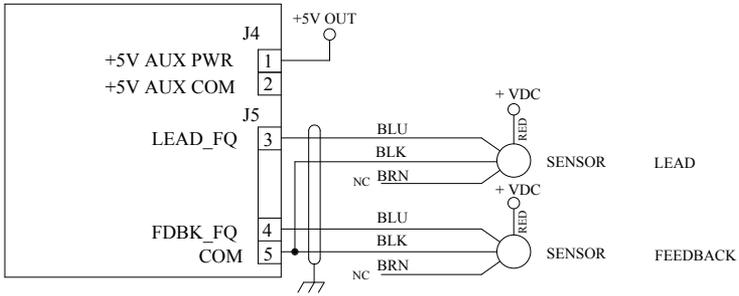
M-TRIM/M-DRIVE



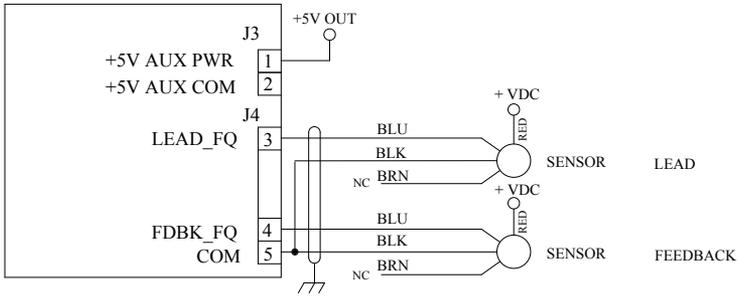
NOTE: THE +12V AUXILIARY POWER SUPPLY PROVIDED FROM THE CONTROL MAY BE USED TO POWER THE SENSORS IF AN EXTERNAL POWER SUPPLY IS USED, IT MUST BE CONNECTED BETWEEN THE RED (VDC) AND BLACK (COM) WIRES OF THE SENSOR EVEN WHEN AN EXTERNAL POWER SOURCE IS USED TO POWER THE SENSOR, THE BLACK WIRE MUST BE CONNECTED TO THE COMMON (COM) OF THE CONTROL SHIELDED CABLE IS RECOMMENDED CONNECT SHIELD TO EARTH GROUND AT ONE END ONLY

OPEN COLLECTOR WITH PULLUPS

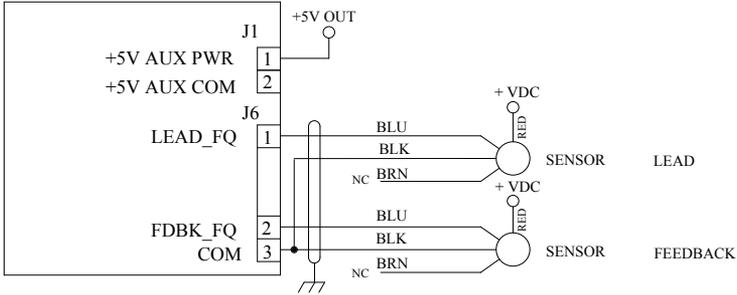
ML-TRIM



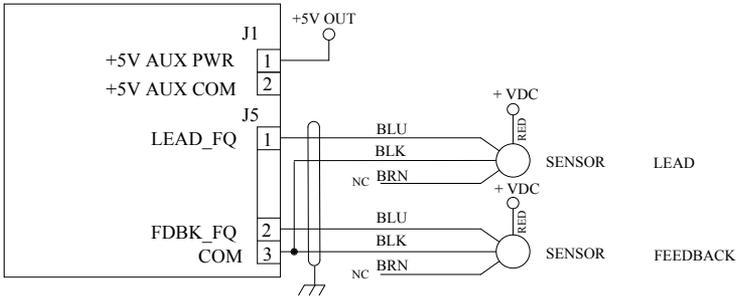
ML-DRIVE



MLP-TRIM

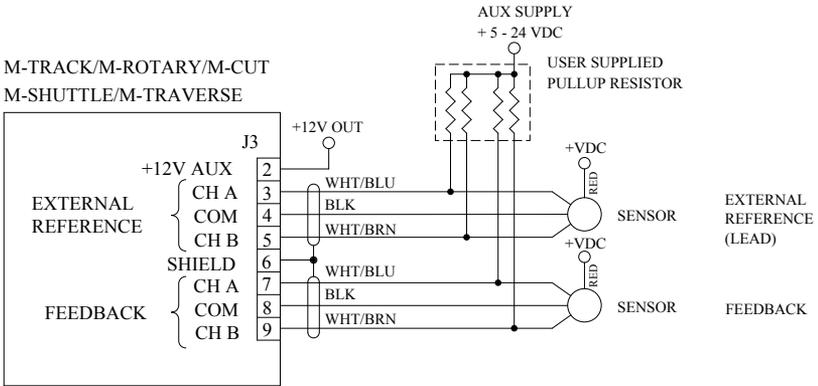
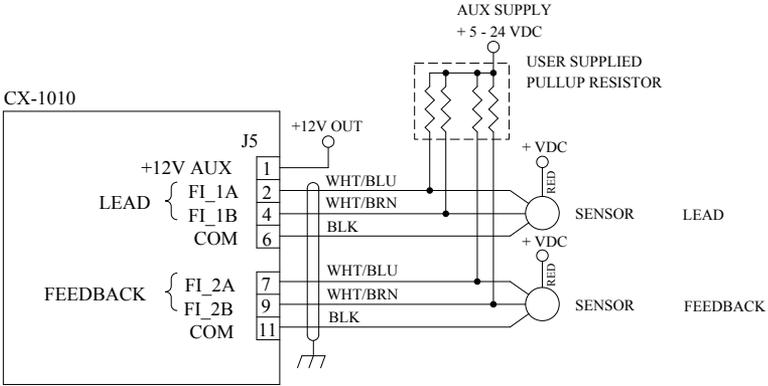


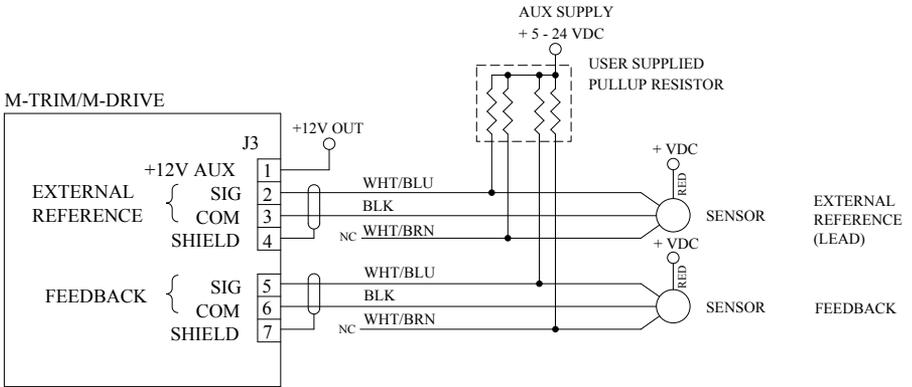
MLP-DRIVE



NOTE: THE +5V AUXILIARY POWER SUPPLY PROVIDED FROM THE CONTROL MAY BE USED TO POWER THE SENSORS IF THE AUX POWER SUPPLY OR AN EXTERNAL POWER SUPPLY IS USED, IT MUST BE CONNECTED BETWEEN THE RED (VDC) AND BLACK (COM) WIRES OF THE SENSOR WHEN EITHER POWER SOURCE IS USED TO POWER THE SENSOR, THE BLACK WIRE MUST BE CONNECTED TO THE COMMON (COM) OF THE CONTROL SHIELDED CABLE IS RECOMMENDED CONNECT SHIELD TO EARTH GROUND AT ONE END ONLY

OPEN COLLECTOR WITHOUT PULLUPS

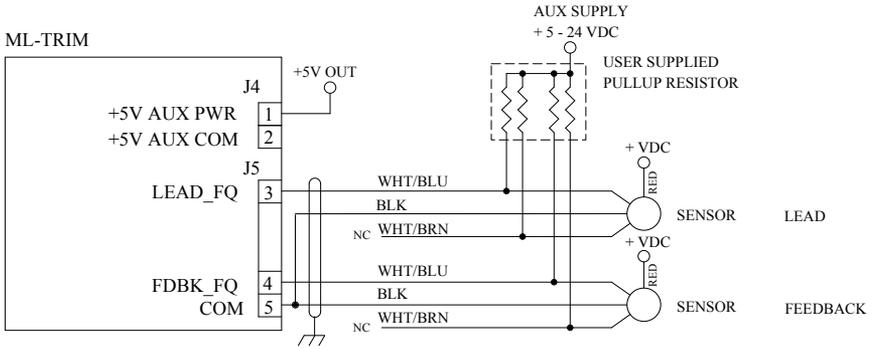




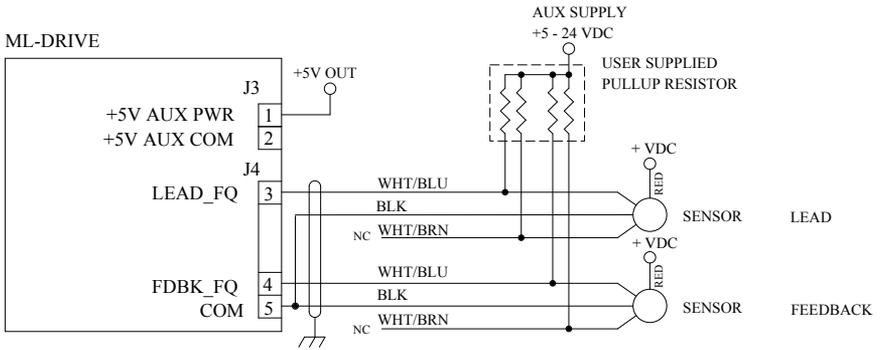
NOTE: THE +12V AUXILIARY POWER SUPPLY PROVIDED FROM THE CONTROL MAY BE USED TO POWER THE SENSORS IF THE AUX POWER SUPPLY OR AN EXTERNAL POWER SUPPLY IS USED, IT MUST BE CONNECTED BETWEEN THE RED (VDC) AND BLACK (COM) WIRES OF THE SENSOR WHEN EITHER POWER SOURCE IS USED TO POWER THE SENSOR, THE BLACK WIRE MUST BE CONNECTED TO THE COMMON (COM) OF THE CONTROL SHIELDED CABLE IS RECOMMENDED CONNECT SHIELD TO EARTH GROUND AT ONE END ONLY

OPEN COLLECTOR WITHOUT PULLUPS

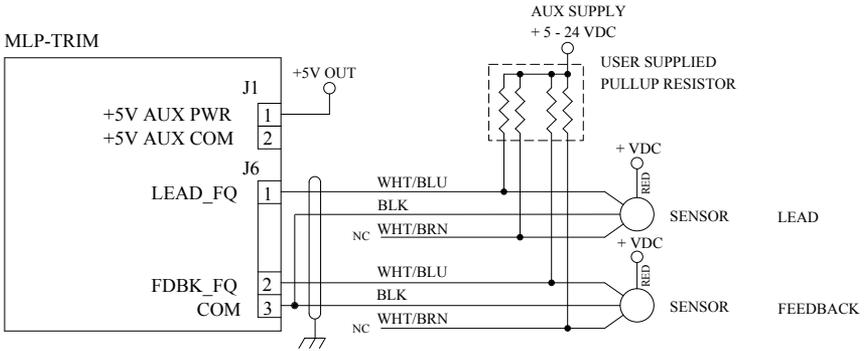
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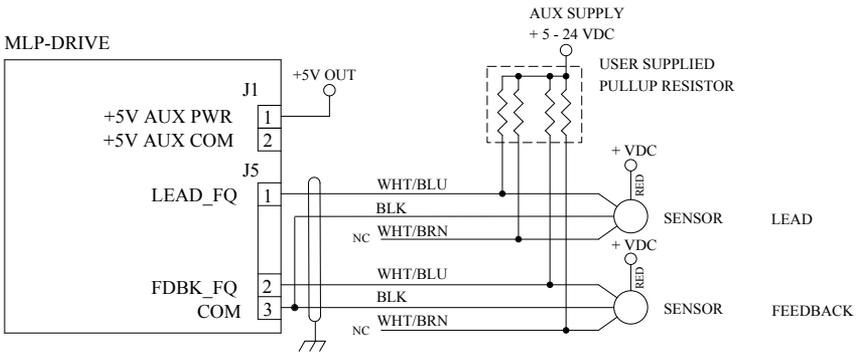
ML-DRIVE



MLP-TRIM



MLP-DRIVE



NOTE: THE +5V AUXILIARY POWER SUPPLY PROVIDED FROM THE CONTROL MAY BE USED TO POWER THE SENSORS. IF THE AUX POWER SUPPLY AN EXTERNAL POWER SUPPLY IS USED, IT MUST BE CONNECTED BETWEEN THE RED (VDC) AND BLACK (COM) WIRES OF THE SENSOR. WHEN EITHER POWER SOURCE IS USED TO POWER THE SENSOR, THE BLACK WIRE MUST BE CONNECTED TO THE COMMON (COM) OF THE CONTROL. SHIELDED CABLE IS RECOMMENDED. CONNECT SHIELD TO EARTH GROUND AT ONE END ONLY.

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