WHERE TO START ...

The Group 11 DCM-2 equipped actuator is designed so the user can quickly diagnose any status conditions causing an interruption in operation.

The following list defines the order of troubleshooting areas that should define the nature of any operational issues a user may be experiencing. A description of each operation follows the list.

- Operating Voltage / Handswitch
- DCM-2 Status Indication LEDs
- DCM-2 testpoints
- DCM-2 Configuration
- Checking Shaft Position
- Inhibitors / Statistics
- CW / CCW TRQ/THR

OPERATING VOLTAGE / HANDSWITCH

By removing the terminal compartment cover to access the terminal block, the operating voltage may be verified with a voltmeter on the appropriate terminals. The appropriate terminals can be identified by reviewing the wiring diagram affixed on the underside of the terminal cover. Check your actuator nameplate for the proper operating voltage specific to your actuator. If the proper voltage is not found, apply the correct voltage before continuing.

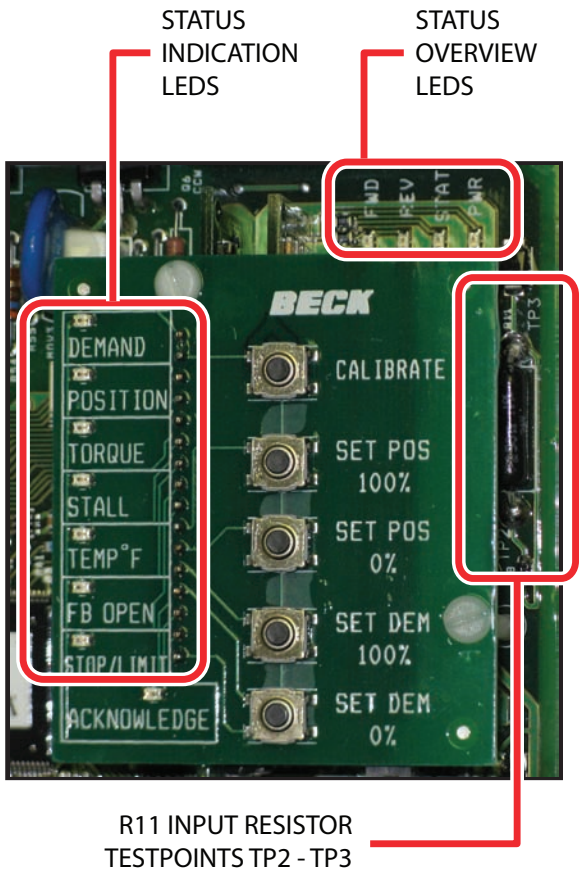
By removing the DCM compartment cover to access the DCM-2 board, the status overview LEDs can be evaluated (see diagram right).

The PWR LED indicates that the board is receiving operating voltage and should cyclically pulse from dim to bright. If the PWR LED is not illuminated, verify correct operating voltage. If applying correct operating voltage does not correct the problem, the DCM-2 may require replacement.

If proper power is verified, the actuator should then be tested with the handswitch. Position the actuator to the full CW position, then to the full CCW position. If successful, move on to the DCM-2 status indication LEDs. If the actuator does not stroke fully and smoothly, there may be a malfunction or maladjustment of a component in the motor circuit. These components include: the handswitch, over-travel limits switches, the R/C components, or the motor assembly itself. Continuity checks per the wiring diagram under the terminal cover should be performed to verify connection from the DCM-2 to the motor. See the troubleshooting matrix for additional information regarding specific failure symptoms.

DCM-2 STATUS INDICATION LEDS

If the STAT LED is illuminated when reviewing the status overview LEDs, then the DCM-2 board has detected a status alarm and further attention is required to alleviate the alarm. Identify the specific status LED that is illuminated by checking the pushbutton board. Review the troubleshooting matrix (pages 63-65) to evaluate possible causes and corrections for specific status indication LEDs. If removing the DCM cover is not practical, the status indication LED bits can be checked using HART (Menu 8C). When the bit is on the LED will be on.



Handswitch

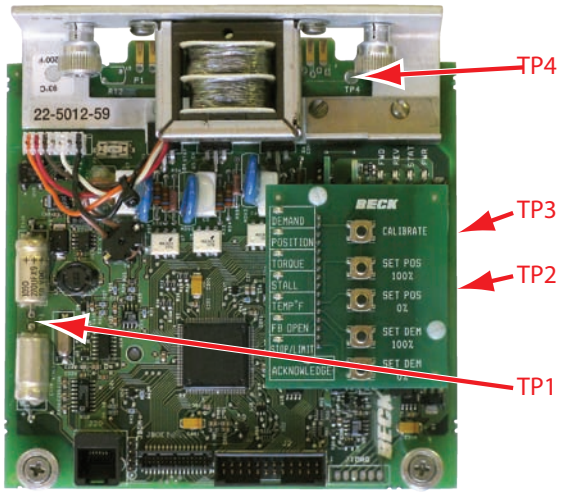
DCM-2 TESTPOINTS

The DCM-2 performs an error-based positioning function. It accepts a 4-20 mA analog demand signal, compares it to an internal position feedback signal from the CPS-2, and controls the motor appropriately to match the shaft position to the demand signal.

The DCM-2 includes four test points (see diagram below) for measuring the demand signal voltage and internal position signal voltages at the DCM-2. The voltage measured across test points TP3 (-) and TP2 (+) (across input resistor R11) should be between 1 and 5 volts dc proportional to your 4-20 mA demand signal.

The actuator's internal position signal is derived from the CPS-2 and may be read on the DCM-2 at test points TP1 and TP4. On a 100° actuator configured for clockwise rotation, the raw position signal should measure 1 to 5 volts dc across test points TP4 (+) and TP1 (-), proportional to the output shaft's 0–100° position (physical shaft position can be determined by viewing the mechanical index). For 90º actuator shaft rotation, the output voltage from the the CPS-2 ranges between 1.2 and 4.8 volts DC. If an actuator is configured for counter-clockwise operation the voltages will be reversed with respect to 0 and 100%. See the CPS-2 Position Voltage chart below right.

During operation in the AUTO mode when the actuator position matches the given demand, the actuator will be considered balanced and should not move. The demand and position can be compared to see if the actuator is balanced via testpoints, reading at the terminal block, through HART communications, or through the serial port. Differences between the demand and position that are smaller than the configured step size (page 33) are acceptable.



DCM-2 Test Points

DCM-2 CONFIGURATION

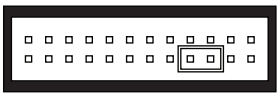
OPERATION MODE

The DCM-2 can be configured for several operation modes as shown in HART menu 7 or serial command "opmode" (page 81). The factory configuration is the "Follow" mode which allows the actuator to operate with a 4-20 mA control signal when the handswitch is set to AUTO.

The "Hold" mode causes positioning according to the HART Interface Demand Value (HART menu 7). The "Stay" mode causes the output shaft to remain stationary and maintain its present position. Note that in "Stay" mode, the Handwheel cannot be freely turned as it will move back to the position where the "Stay" mode was activated. The "Stop" mode removes power from the motor. Note that in "Stop" mode the Handwheel can be freely turned. All operating modes can be overridden by the drive Handswitch. If the operation mode is inadvertently switched to a mode other than "Follow" there will not be an outward indicator. ***Resetting the DCM-2 to factory settings does not change the operation mode back to "Follow" for safety purposes.***

J-BOOT JUMPER

Some legacy versions of the Digital Control Module board included a jumper on the "JBOOT" connector (as shown here).



If the jumper is transferred from the old board to a new DCM-2 part number 22-5012-59, the new board will be rendered non-operational. If a jumper has already been transferred, removing it should allow the new DCM-2 to work again.

CPS-2 Position Voltage

Shaft Position	100° Rotation		90° Rotation	
	CW	CCW	CW	CCW
0%	1.0	5.0	1.2	4.8
25%	2.0	4.0	2.1	3.9
50%	3.0	3.0	3.0	3.0
75%	4.0	2.0	3.9	2.1
100%	5.0	1.0	4.8	1.2

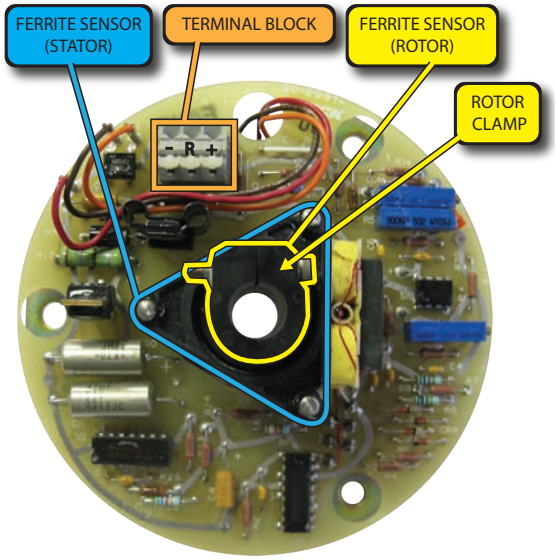
CHECKING SHAFT POSITION

The output shaft position can be read using HART in MENU 1 (see page 66). It can also be determined by running the serial command "stat" (page 83).

If the Position % value does not appear to match the physical output shaft 0% and 100% positions, a CPS-2 rotor adjustment may be required. Follow these directions to verify correct rotor positioning.

1. Rotate the rotor on the control end shaft until the dc voltage measured across terminals + and R (see illustration below) reads 50% (approx. 3 volts) of the signal span. Tighten clamp to 5 lb-in (0.6 N•m) torque.
2. Using the handswitch, rotate the output shaft of the actuator in the clockwise direction. The dc voltage measurement across the + and R terminals should increase. If the voltage decreases, the rotor is out of phase with the actuator travel and will require adjustment, continue to step 3. Otherwise the rotor adjustment is complete.
3. Measure dc voltage across terminals + and R(-). Position the actuator with the handswitch until the voltage reading is approximately 3 volts.
4. Loosen the rotor clamp screw and rotate the rotor 180 degrees. Verify the voltage is 3.0 volts and tighten the rotor clamp screw. Repeat step 2.

Note: The position signal can be measured across DCM-2 test points TP4 (+) and TP1 (-) instead of the CPS-2 terminals (+) and R(-) respectively if so desired.



CPS-2 Transducer Board

INHIBITORS / STATISTICS

Conditions that are preventing the actuator from moving are called inhibitors. HART MENUS 8F and 8G list the CW and CCW inhibitors respectively (page 66). They can also be reviewed by running the serial command "stat" (page 83). The following list indicates why the inhibitor would be in the ON state.

Balance
Demand and position are balanced.

Supervisory
DCM-2 is in a reset sequence or malfunctioning.

Stall
A stall condition has been detected (page 45)

OverTrq/Thr
An overtorque condition has occurred (page 43)

Switch Block
Not applicable on Group 11 actuators.

Bad Pos Sig
The position signal from the CPS-2 is outside of the normal 1-5 Vdc range.

Bad Dem Sig
The demand signal is currently in a LOS condition (page 37)

Local Cal
The calibrate button is being depressed on the local pushbutton panel.

Contacting the factory with results from the "stat" serial command or statistics through HART menu 8 is recommended for troubleshooting assistance.

CW/CCW TRQ/THR

Historical peak torque measurements are recorded for 10 equal segments of travel in both the CW and CCW travel directions. This historic data is available through HART menus 11 and 12 or serial port interface (torqprof command) as described on page 82. Evaluating this data can show if the application is experiencing normal torque levels throughout travel. It could also highlight areas in travel that the torque may be unexpectedly high.

Examples of an expected elevated torque may be at the seat of a damper or valve when the device is closing against a seal. Abnormally high torque elsewhere in travel may be indicative of a sticking damper/valve that could require maintenance or a dynamic torque situation. Monitoring these values periodically may uncover developing issues, such as an increasing torque requirement in a segment of travel. Preventative maintenance may be performed on the driven device to eliminate future issues.

CONDITIONS	POSSIBLE CAUSES	CORRECTIONS
1. No DCM-2 LEDs are illuminated.	a. No power is applied to the actuator. b. Incorrect power is applied to the actuator. c. Main power fuse/breaker is blown. d. DCM-2 malfunction.	a. Apply operating voltage to the operating voltage terminals. b. Verify correct voltage on actuator nameplate and ensure that it is applied at the operating voltage terminals. c. Verify fuse/breaker integrity. Replace/reset if blown. Find cause of the short circuit. d. Replace DCM-2.
2. STAT LED is illuminated.	a. A status alarm is active.	a. Check the status indication LEDs on the local pushbutton interface of the DCM-2. Continue troubleshooting based on the LEDs that are illuminated.
3. DEMAND LED is illuminated.	a. No Demand signal. b. Applied Demand signal is outside of configured range. c. Polarity of applied signal wires is reversed.	a. Apply a Demand signal to terminals AA (+) & BB (-). b. Confirm Demand signal value via HART or by measuring DC voltage across DCM-2 test points TP3(+) & TP2(-). Should see 1-5 volts for 4-20 mA applied signal. c. Correct the polarity of the applied control signal wires on terminals AA (+) & BB (-).
4. POSITION LED is illuminated.	a. Position signal voltage generated by CPS-2 read by the DCM-2 is outside of the configured range. b. CPS-2 malfunction. c. DCM-2 malfunction.	a. Using HART communicator check the Position Sensor Setup menu to verify the Present CPS voltage falls within the configured CPS Zero% and Span (typical range 1 to 5 volts). OR measure DC volts between DCM-2 test points TP4 (+) and TP1 (-) to verify present CPS voltage. If the voltage is outside of 1 to 5 volts, recalibrate or replace CPS-2. b. Replace CPS-2. c. Replace DCM-2.
5. TORQUE LED is illuminated.	a. Torque exceeding configured limit (typically over 150% of rated torque) is being applied to the output shaft. b. Torque Null and Torque Constant values are not set correctly. c. Torque cable is not connected to DCM-2.	a. Eliminate cause of excessive torque (i.e. binding damper, improper linkage, etc.) b. Locate torque null and constant values inside DCM compartment and set via HART or serial port. c. Reconnect torque cable to DCM-2.
6. STALL LED is illuminated.	a. Actuator has been energizing either the CW or CCW motor winding longer than the configured stall timer due to a physical obstruction. b. The configured stall time is less than the configured Max Travel Time.	a. Eliminate the obstruction and reset the stall by reversing direction on your Demand signal, cycling the power, or issuing the stall reset from HART or serial command. b. Configure the stall time to exceed the Max Travel Time via HART or serial command.
7. TEMP F LED is illuminated.	a. The measured temperature at the DCM-2 is outside of the normal operating range of -40° to 185° Fahrenheit.	a. Protect the actuator from the extreme temperatures below or above the operating range to eliminate the alarm.

CONDITIONS	POSSIBLE CAUSES	CORRECTIONS
8. FB OPEN LED is illuminated.	a. The position Feedback circuit current loop is not complete. b. The position Feedback is enabled, but not in use.	a. Ensure the device measuring the 4-20 mA Feedback is properly terminated on terminals DD (-) and EE (+) and is applying a 0 - 800 ohm load resistance. b. Disable Feedback via HART or serial command. OR terminate the Feedback loop by applying a 0-800 ohm load resistance across terminals DD and EE.
9. STOP/LIMIT LED is illuminated.	a. The applied operating voltage is outside of the tolerance (+10%/-15%) of the nameplate operating voltage. b. A DCM-2 fuse is open. c. A component failure has occurred on the DCM-2. d. The Handswitch is in STOP. e. The actuator has traveled to an over-travel limit switch. f. The actuator is not at an over-travel limit switch, but the limit switch is open.	a. Apply the correct operating voltage to the actuator per the voltage stamped on the nameplate. b. Replace the open fuse. c. Replace the DCM-2. d. Place the Handswitch in AUTO. e. Verify if the limit switch is set outside of the electrically calibrated limits, readjust if necessary or replace. f. Replace the over-travel limit switch (CW/CCW) assembly.
10. Power LED is pulsing bright to dim.	a. This is a normal condition indicating that the processor is functioning.	a. No action required.
11. All LEDs are illuminated or flashing.	a. A component failure has occurred on the DCM-2.	a. Replace the DCM-2.
12. REV LED illuminated, actuator is not moving, and there are no other status alarms.	a. Operation mode is set to “STOP”.	a. Using HART (operation mode menu) OR using serial command “opmode”, change operation mode to “Follow”.
13. Actuator will not hold position with Handswitch in STOP.	a. Self Locking Mechanism (SLM) is damaged.	a. Rebuild the SLM assembly OR replace motor assembly.
14. Motor runs, but the output shaft does not move in one or both directions.	a. Self Locking Mechanism (SLM) has failed.	a. Rebuild the SLM assembly OR replace motor assembly.
15. Actuator has a flashing PWR LED on, no status LED’s are lit, but does not respond to Demand signal or Handswitch.	a. The Handswitch is damaged. b. The Handswitch jumper between terminal A and C is missing or faulty.	a. Check continuity from terminals N to V and M to U with Handswitch in AUTO position. If either does not show continuity, replace Handswitch. b. Install a wire jumper between terminals A and C.
16. Actuator has a flashing PWR LED on, no status LED’s are lit, works with the Handswitch, but does not respond to Demand signal.	a. A jumper has been installed in the 24-pin connector (J2) of the DCM-2 board.	a. Remove any jumpers from the J2 connector on the DCM-2.
17. HART communications cannot be established with the DCM-2.	a. The device description (DD) file is not installed. b. The HART communicator is not compatible with Beck equipment. c. The HART communications circuit on the DCM-2 is damaged.	a. Install the Beck MK-2 DD on your HART device. b. Utilize a compatible HART communicator or configure the actuator through the serial port. c. Replace the DCM-2.

CONDITIONS	POSSIBLE CAUSES	CORRECTIONS
18. CPS position voltage on DCM testpoints TP4 and TP1 is within 1-5 volts DC following the actuator position, but the position Feedback signal at terminals DD and EE remains constant or is erratic.	a. The position Feedback circuit on the DCM-2 is damaged.	a. Replace the DCM-2.
19. Output shaft rotates opposite of desired direction when applying a 4-20 mA Demand signal.	a. The rotation direction is incorrectly configured.	a. Configure the rotation direction using pushbutton, HART, or serial method.
20. Motor erratic or runs in wrong direction in AUTO or manual operation.	a. Motor winding is open. b. Motor capacitor is shorted or open. c. Motor resistor is open.	a. Replace motor assembly. b. Replace capacitor. c. Replace resistor assembly.
21. Actuator does not follow input signal until maximum or minimum is reached, then drives uncontrollably to limit.	a. Wire jumpers on terminals M and N are reversed. b. CPS-2 Feedback out of phase with the motor.	a. Connect terminal jumpers from M to D and from N to F. b. Recalibrate the CPS-2.
22. Actuator motor oscillates in AUTO mode.	a. Excessive noise on the input signal. b. Physical obstruction causing a stall condition (e.g., valve jammed or load greatly exceeds actuator rating.) c. The DCM-2 is malfunctioning. d. Excessive wear in the gear train or bearings. e. CPS-2 Failure. f. Self Locking Mechanism (SLM) is worn or damaged.	a. Eliminate noise or increase actuator step size. b. Check operation with Handswitch and remove obstruction if present. Handswitch bypasses the DCM-2 board. c. Replace the DCM-2 board. d. Replace worn actuator parts. e. Replace the CPS-2 board. f. Rebuild the SLM or replace the motor assembly.
23. Actuator will not run in either direction or one direction in automatic or manual operation.	a. Over-travel limit switch failure. b. Handswitch failure.	a. Replace over-travel limit switch assembly (CW/CCW). b. Replace Handswitch assembly.
25. Actuator does not stop at normal or desired limit of shaft travel.	a. DCM-2 position calibrated incorrectly. b. Limit switches adjusted incorrectly. c. Over-travel limit switch failure.	a. Calibrate DCM-2 0% and 100% positions. b. Readjust the limit switches. c. Replace the over-travel limit switch assembly (CW/CCW).
26. Position Feedback signal does not reach maximum signal, but low end calibration is correct.	a. Feedback loop is overloaded.	a. Make sure that the load resistance is between 0 and 800 ohms total across terminals DD and EE.
27. Actuator runs uncontrolled to one end of travel.	a. Handswitch Failure. b. The DCM-2 is malfunctioning. c. The CPS-2 is malfunctioning. d. Terminal block jumpers F to N and D to M not connected. e. The actuator has detected a loss of Demand signal (LOS) and is configured for GTP 0% or 100%. f. Handswitch in CW or CCW position.	a. Check continuity from terminals A-V and A-U with Handswitch in AUTO and actuator power disconnected. If either shows continuity, replace Handswitch. b. Verify CPS-2 voltage signal at DCM-2 test points TP4 and TP1 for 1-5 volts DC corresponding with output shaft position. If signal is valid, replace DCM-2. c. Verify CPS-2 wire connections, check CPS-2 voltage at DCM-2 test points TP4 and TP1 for 1-5 volts DC corresponding with output shaft position. Replace CPS-2 if voltage does not change with position. d. Install jumpers. e. See troubleshooting condition no. 3 (DEMAND LED is illuminated). f. Return Handswitch to AUTO position.

HART DEVICE DESCRIPTION (DD) MENU STRUCTURE

MENU 1 -- ONLINE

1	Functions	**Link -- Menu 2**
2	Position	0.0%–100.0%
3	Demand	0.0%–100.0%
4	Loop(Dem)	4.00–20.00 mA
5	Trq/Thrust	Percentage
6	Temp	°F. or °C.
7	Feedback	4.00–20.00 mA

FROM MENU 1

MENU 2 -- FUNCTIONS

1	Setup Checklist	**Link -- Menu 3**
2	Device Information	**Link -- Menu 4**
3	Configuration	**Link -- Menu 5**
4	Statistics	**Link -- Menu 6**
5	Manual Operation	**Link -- Menu 7**
6	Diagnostics	**Link -- Menu 8**
7	Calibration Trim	**Link -- Menu 9**

MENU 8 NEXT PAGE

FROM MENU 2

MENU 3 -- SETUP CHECKLIST

The setup checklist gathers the most commonly accessed parameters and settings in one location for ease of access. All items in this menu are accessible through other menus, also.

FROM MENU 2

MENU 4 -- DEVICE INFORMATION

1	Tag*	Alphanumeric
2	Descriptor*	Alphanumeric
3	Message*	Alphanumeric
4	Model#	Actuator model no.
5	Drive S/N*	Number
6	InstId*	Date—DD/MM/YYYY
7	Setup*	Date—DD/MM/YYYY
8	Calibrtd*	Date—DD/MM/YYYY
9	Review	**Link -- Menu 15**
10	Poll Addr*	Number

FROM MENU 4

MENU 15 -- REVIEW

The review menu allows the user to view many parameters in a read-only format.

FROM MENU 2

MENU 6 -- STATISTICS

1	Starts	Number
2	Reversals	Number
3	Stalls	Number
4	OverTorques◆	Number
5	Pk Torque◆	Number
6	TotRunTm	Seconds
7	High Temp	155 degF
8	Low Temp	23 degF

FROM MENU 2

MENU 7 -- MANUAL OPERATION

1	Op Mode*	Follow, Hold, Stay, Stop
2	Demand*	Percentage
3	Reset Stall»	Action

FROM MENU 2

MENU 9 -- CALIBRATION TRIM

1	PresCPS V*	Voltage
2	Loop(Dem)*	4.00 mA, 20.00 mA
3	Feedback*	mA
4	Trq/Thrust*	Percentage

FROM MENU 2

MENU 5 -- CONFIGURATION

1	General Setup	**Link -- Menu 5A**
2	PositionSensrSetup	**Link -- Menu 5B**
3	Demand Setup	**Link -- Menu 5C**
4	Feedback Setup	**Link -- Menu 5D**
5	Torque Setup	**Link -- Menu 5E**
6	Restore to Factory»	Action
7	Use Default Setup»	Action

FROM MENU 5

MENU 5A -- GENERAL SETUP

1	Drive Dir*	CW Incr or CCW Incr
2	Max Travel*	Degrees
3	Travel*	Degrees
4	StepSize*	0.100%–2.500%
5	Stall Time*	30–300 S (seconds)
6	StallProt*	Enabled or Disabled
7	LimitSwitch*	Accept or Alert
8	PositionUnit*	Degrees
9	Temperature Unit*	degF or degC

FROM MENU 5

MENU 5B -- POSITIONSENSRSETUP

1	Set Pos 0%»	Action
2	Set Pos 100%»	Actin
3	PresCPS V	Voltage
4	CPS Zero%*	1.000–5.000 v
5	CPS Span	Voltage
6	CPS RngLwr	Voltage
7	CPS RngUpr	Voltage
8	Pos S/N	Number
9	Snsr Dir	CW Incr or CCW Incr

FROM MENU 5

MENU 5C -- DEMAND SETUP

1	DemRngLwr*	4.00–16.00 mA (4.00)**
2	DemRngUpr*	8.00–20.00 mA (20.00)**
3	Dem Curve*	Linear, Square, Square Root, Special
4	Dem Curve Spcl	**Link -- Menu 5C1**
5	LOS Mode*	Stay or Go-to-Pos
6	LOS Pos*	-5.00%–105.00%
7	DemLimLwr*	0.00–12.00 mA
8	DemLimUpr*	mA

FROM MENU 5C

MENU 15 -- DEM CURVE SPCL

1	DemNode1X*	Percentage
2	DemNode1Y*	Percentage
3	DemNode2X*	Percentage
4	DemNode2Y*	Percentage
	. . .	
41	DemNode21X*	Percentage
42	DemNode21Y*	Percentage

FROM MENU 5

MENU 5D -- FEEDBACK SETUP

1	FB RngLwr*	3.00–16.00 mA (4.00)**
2	FB RngUpr*	7.00–21.00 mA (20.00)**
3	Feedback*	Enabled or Disabled
4	FB Curve*	Linear or InvDem

FROM MENU 5

MENU 5E -- TORQUE SETUP ◆

1	Trq/Thrust*	Enabled or Disabled
2	Ovt Prot*	Enabled or Disabled
3	AlarmLevel*	Percentage
4	ShutDownTrq*	Number
5	Trq Null*	Number (TK units)
6	Trq Const*	Number (TK units)

FROM MENU 2

MENU 8 -- DIAGNOSTICS

1	Status	**Link -- Menu 8A**
2	Tests	**Link -- Menu 10**
3	CW Torque ◆	**Link -- Menu 11**
4	CCW Torque ◆	**Link -- Menu 12**
5	Alarm Setup	**Link -- Menu 13**
6	RealTimeClock	**Link -- Menu 14**

FROM MENU 8

MENU 8A -- STATUS

1	LED Status	**Link -- Menu 8B**
2	Operating Status	**Link -- Menu 8C**
3	Switch Status	N/A
4	Local Cntrl Status	**Link -- Menu 8E**
5	Line Freq	60 or 50 Hz
6	CW Inhibitors	**Link -- Menu 8F**
7	CCW Inhibitors	**Link -- Menu 8G**

FROM MENU 8A

MENU 8B -- LED STATUS

1	Status	ON or OFF
2	Reverse	ON or OFF
3	Forward	ON or OFF
4	Demand	ON or OFF
5	Position	ON or OFF
6	Trq/Thrust	ON or OFF
7	Stall	ON or OFF
8	Temperature	ON or OFF

FROM MENU 8A

MENU 8C -- OPERATING STATUS

1	Dem <> Limits	ON or OFF
2	Pos <> Limits	ON or OFF
3	Temp <> Limits	ON or OFF
4	Torq <> Limits	ON or OFF
5	Over-Torq Stop	ON or OFF
6	Stalled	ON or OFF
7	Feedback Open	ON or OFF
8	Switch Block	ON or OFF

FROM MENU 8A

MENU 8D -- SWITCH STATUS

Not Applicable to Group 11 Actuators

FROM MENU 8A

MENU 8E -- LOCAL CNTRL STATUS

1	Calibrate	ON or OFF
2	Set Pos 100%	ON or OFF
3	Set Pos 0%	ON or OFF
4	Set Dem 100%	ON or OFF
5	Set Dem 0%	ON or OFF

FROM MENU 8A

MENU 8F -- CW INHIBITORS

1	Balance	ON or OFF
2	Supervisory	ON or OFF
3	Stall	ON or OFF
4	OverTrq/Thr	ON or OFF
5	Switch Block	ON or OFF
6	Bad Pos Sig	ON or OFF
7	Bad Dem Sig	ON or OFF
8	Local Cal	ON or OFF

FROM MENU 8A

MENU 8G -- CCW INHIBITORS

1	Balance	ON or OFF
2	Supervisory	ON or OFF
3	Stall	ON or OFF
4	OverTrq/Thr	ON or OFF
5	Switch Block	ON or OFF
6	Bad Pos Sig	ON or OFF
7	Bad Dem Sig	ON or OFF
8	Local Cal	ON or OFF

FROM MENU 8

MENU 10 -- TESTS

1	FB Out Test»	Action
2	Board Self-Test»	Action
3	Identify Device»	Action
4	Board Reset»	Action

FROM MENU 8

MENU 11 -- CW TORQUE ◆

1	Segment 1	Percentage
		. . .
10	Segment 10	Percentage

FROM MENU 8

MENU 12 -- CCW TORQUE ◆

1	Segment 1	Percentage
		. . .
10	Segment 10	Percentage

FROM MENU 8

MENU 13 -- ALARM SETUP

1	AlarmPol*	Drops Out or Pulls In
2	Alarm Mask	**Link -- Menu 29**

FROM MENU 13

MENU 13A -- ALARM MASK

1	DemandLOS*	ON or OFF
2	Trq/Thrust High*	ON or OFF
3	Stall*	ON or OFF
4	Trq/Thrust Stop*	ON or OFF
5	Stop/Limit*	ON or OFF
6	FeebackLOS*	ON or OFF
7	Temperature*	ON or OFF
8	PositionLOS*	ON or OFF
9	RTC Fail*	ON or OFF
10	Torq/Thrust/MeasFail*	ON or OFF
11	PositionA/D Error*	ON or OFF
12	Demand/MeasFail*	ON or OFF
13	Reserved 1*	ON or OFF
14	PositionLOS*	ON or OFF
15	TemperatureMeasFail*	ON or OFF
16	MemoryFail*	ON or OFF
17	InvalButtonPress*	ON or OFF
18	DemandTooHigh*	ON or OFF
19	DemUnderHART/FF Ctl*	ON or OFF
20	DemUnderPAT Ctl*	ON or OFF

FROM MENU 8

MENU 14 -- RealTimeClock

1	RTC Day*	Integer
2	RTC Month*	Integer
3	RTC Year*	Integer
4	Hour (24)*	Integer
5	Minute*	Integer

SAMPLE MENU BLOCK FORMAT

Previous Menu

MENU # - MENU DESCRIPTION

1	Parameter	Range / Units / Info.

NOTES:

* Parameter names marked with an asterisk indicate that the value may be edited.

» Parameter names marked with a double arrow indicate that the menu item performs a function.

. . . Indicates that the menu is longer than shown.

◆ Menu / function requires an extra-cost torque sensing option specified at time of order.