



RCEL

Digital Controller PCU DHC-100D

Instruction

Quick Calibration Procedure DHC-100D

General

The MODE button selects a particular function, or mode, and the indicator for the selected mode turns on steady. Pushing the MODE button saves any new setting of the current mode before switching to the next mode. The adjust buttons up (▲) and down (▼) are used to make adjustments to current mode. For more details regarding calibration and features refer to the manual No. 621.

1. Before applying power, ensure that the unit is properly mounted and properly wired to the actuator. Refer to the pertinent Data Sheet specified for the actuator. Ensure potentiometer gears are tight and properly meshed.
2. Apply power to the actuator on Connector J2: terminal #1 (neutral), terminal #2 (line) and terminal #3 (earth). There is no need for a signal connection during calibration.
3. Push the MODE button until the yellow "MANUAL/FB POT CAL" LED is illuminated. The LED may be flashing (at different speeds) through the next several steps. This is expected and will be explained.
4. Use the adjust buttons (▲) and (▼) to move the actuator and verify that the limit switches are set past the desired open and closed positions; then move the actuator to mid stroke.
5. If LED is solid, proceed to step 7.
6. If LED is flashing, loosen the gear on the actuator shaft and rotate the potentiometer gear until the LED is no longer flashing, but on solid – this indicates the centre of the potentiometer's travel. Note that the LED will flash at a slower rate the farther away from the mid position it gets. Once the LED is on solid tighten all gears.
7. Push the MODE button until the "CLOSE" LED is illuminated. Use the adjust buttons (▲) and (▼) to drive the actuator to the desired closed position. Ensure that the close limit switch does not engage.
8. Push the MODE button until the "OPEN" LED is illuminated. Use the adjust buttons (▲) and (▼) to drive the actuator to the desired open position. Ensure that the open limit switch does not engage.
9. If an OTR-100 option module is installed, follow Auxiliary Open/Close Setup (see page 2); otherwise continue to the next step.
10. Push the MODE button until the "COMMAND TYPE" LED is illuminated. Use the adjust buttons (▲) and (▼) to select appropriate input signal (4-20mA, 1-5VDC, 0-5VDC, 0-10VDC or Digital). If 0-5VDC or 0-10VDC is selected, the LOSS OF COMMAND features is not available, so proceed to step 12.
11. Push the MODE button until the "LOSS OF COMMAND" LED is illuminated; this sets the actuator to a predetermined position upon loss of command. Use the adjust buttons (▲) and (▼) to select appropriate position (OPEN, CLOSE or LAST POSITION).

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12. If an OTR-100 or OTX-100 option module is installed, follow Auxiliary Position Output Mode Setup (see below); otherwise continue to the next step.
13. Push the MODE button until the “AUTO” LED is illuminated. Your calibration is now COMPLETE. Connect the command signal wires to connector J2: terminal #4 (signal ground) and terminal #5 (mA input) OR terminal #6 (voltage input), depending on the application. If a signal input was already connected, the actuator should have moved to that position.
3. Push the MODE button so the “AUX POSITION OUT CAL” LED remains steady while the “OPEN” LED flashes. Use the adjust buttons (▲) and (▼) to set the desired output voltage or current (mA) on the option module output for the open position.
4. Continue with Step 13.

Auxiliary open/Close Setup (for units with an OTR-100 option module only)

1. Push the MODE button until the “AUX CLOSE OUTPUT” LED is illuminated. Use the adjust buttons (▲) and (▼) to drive the actuator to the desired auxiliary close position.
2. Push the MODE button until the “AUX OPEN OUTPUT” LED is on. Use the adjust buttons (▲) and (▼) to drive the actuator to the desired auxiliary open position.
3. Continue with Step 10, page 1.

Auxiliary Position Output Mode Setup (for units with an OTR-100 or OTX-100 option module only)

1. Push the MODE button until the red “AUX POSITION OUT CAL” LED illuminates while the “CLOSE” LED flashes. Note that the red LED flashes to indicate a “Fault” and turns on steady to indicate the “AUX POSITION OUT CAL” modes.
2. Use the adjust buttons (▲) and (▼) to set the desired output voltage or current (mA) on the option module output for closed position.



Troubleshooting Guide

Problem	Possible Causes	Remedies
No response from unit (All lights are off)	<ul style="list-style-type: none"> • No power • Excessive voltage applied to unit • Blown or missing fuse 	<ul style="list-style-type: none"> • Check power source • Connect proper voltage or replace defective unit if necessary • Replace with appropriate fuse; see manual 621 SPECIFICATIONS
No response from unit (MANUAL/FB POT CAL light is on)	<ul style="list-style-type: none"> • Jumper wire on J7 terminal block is missing. • Auto/Manual station is improperly wired 	<ul style="list-style-type: none"> • Install jumper wire on J7 terminal block. • Check wiring on Auto/Manual station; see manual 621 VERRIDE MODE
Actuator rotates backwards	<ul style="list-style-type: none"> • Actuator or valve is mounted incorrectly on coupling • Actuator needs to be reverse acting 	<ul style="list-style-type: none"> • Remount actuator if necessary • Refer to CLOSE and OPEN modes in manual 621
Actuator does not respond to input signal (FAULT indicator constantly flashes)	<ul style="list-style-type: none"> • No input signal connected when using 4-20mA, 1-5VDC or Digital inputs • Input signal polarity reversed • Input signal wired to wrong terminal • Feedback potentiometer or motor/solenoids are improperly wired • Feedback potentiometer out of range • Defective feedback potentiometer • Defective motor brake (not for actuators with self-locking gearbox) • Defective motor (not turning) • Motor turns, but actuator output shaft is not moving 	<ul style="list-style-type: none"> • Connect input signal and refer to LOSS OF COMMAND in manual 621 • Reverse input wires • Check input signal wiring; see manual 621 OWER/SIGNAL J2 • Check wiring; see manual 621 ACTUATOR J1 • Refer to MANUAL/FB POT CAL in manual 621 • Replace feedback potentiometer • Repair or replace motor brake • Repair or replace motor • Repair or replace actuator
Actuator does not respond to input signal (FAULT indicator is off)	<ul style="list-style-type: none"> • Closed and open positions are set to the same position 	<ul style="list-style-type: none"> • Set closed and open settings; see manual 621 CLOSE and OPEN
FAULT indicator flashes after actuator reaches the fully closed or open position	<ul style="list-style-type: none"> • Closed or open limit switches set inside the operating range • Torque switches trip due to mechanical end stops set inside the operating range 	<ul style="list-style-type: none"> • Adjust limit switch cams; see manual 621 CLOSE and OPEN • Adjust end stops; see manual 621 CLOSE and OPEN modes



Troubleshooting Guide

Problem	Possible Causes	Remedies
AUX CLOSE OUTPUT or AUX OPEN OUTPUT indicators flash	<ul style="list-style-type: none"> • Actuator position is near closed or open 	<ul style="list-style-type: none"> • If an OTR-100 option module is installed, set Aux Close and Aux Open positions; see manual 621 AUX CLOSE OUTPUT and AUX OPEN OUTPUT. • If an OTR-100 option module is not installed, no remedy is required
Actuator operates erratically (FAULT indicator flashes erratically)	<ul style="list-style-type: none"> • AC ripple induced on the command input signal • Defective feedback potentiometer • Loose feedback potentiometer or loose feedback potentiometer gears • Sloppy gear tooth engagement 	<ul style="list-style-type: none"> • Use equipment that isolates AC ripple from the command signal • Replace feedback potentiometer • Tighten feedback potentiometer and/or potentiometer gears • Adjust feedback potentiometer gears for tight engagement.
Actuator hunts for position	<ul style="list-style-type: none"> • No motor brake or brake slipping (not for actuators with self-locking gearbox) 	<ul style="list-style-type: none"> • Install or repair motor brake
Triac output failure (Motor buzzes and overheats)	<ul style="list-style-type: none"> • Exposure to water from conduit entrance • Exposure to water from unsealed actuator housing • Exposure to moisture from condensate • Corrosion from exposure to salts or acids • External power applied to motor connections at J1-1 or J1-3 • Motor capacitor is defective, or has incorrect voltage rating • Lightning or power surge 	<ul style="list-style-type: none"> • Install drip loop at conduit entrance • Inspect and/or replace actuator housing gasket; use actuator with proper sealing • Use heater and/or desiccant packets • Use corrosion inhibitors and desiccant packets • Remove connector J1 prior to applying external power • Replace motor capacitor • Replace the defective unit (e.g. positioning card, motor or capacitor)

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