## J1939 CAN BUS PROTOCOL : DUAL MUX MOTOR CONTROLS

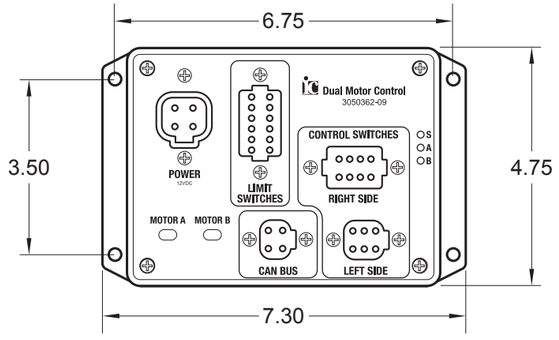
| Dual Motor Controller 1 Parameter Group Label | Position | SPN length | Name | Description |
|---|---|---|---|---|
| Local Control Switch Inputs | 1.1 | 2 | Open Motor A Control Switch Input | The state of the hardwired local control switches:<br>00 - Input is off<br>01 - Input is on<br>10 - Not Used<br>11 - Error Indicator |
| Local Control Switch Inputs | 1.5 | 2 | Open Motor B Control Switch Input | |
| Local Control Switch Inputs | 1.7 | 2 | Close Motor B Control Switch Input | |
| Limit Switch Inputs | 2.1 | 2 | Open Motor A Limit Switch Input | |
| Limit Switch Inputs | 2.3 | 2 | Closed Motor A Limit Switch Input | |
| Limit Switch Inputs | 2.5 | 2 | Open Motor B Limit Switch Input | |
| Limit Switch Inputs | 2.7 | 1 | Closed Motor B Limit Switch Input | |
| Indicators | 3.1 | 2 | Motor A Open | |
| Indicators | 3.2 | 2 | Motor A Full Closed | |
| Indicators | 3.3 | 2 | Motor A Full Open | |
| Indicators | 3.4,5,6 | 2 | not used | 0 - indicator off, 1- indicator on |
| Indicators | 3.7 | 2 | Motor A Locked | |
| Indicators | 4.1 | 2 | Motor B Open | |
| Indicators | 4.2 | 2 | Motor B Full Closed | |
| Indicators | 4.3 | 2 | Motor B Full Open | |
| Indicators | 4.4,5,6 | 2 | not used | |
| Indicators | 4.7 | 2 | Motor B Locked | |
| Status | 5.1 | 1 | Motor A Status | Motor A + relay output |
| Status | 5.2 | 1 | Motor A Status | Motor A - relay output |
| Status | 5.3 | 1 | Motor B Status | Motor B + relay output |
| Status | 5.4 | 1 | Motor B Status | Motor B - relay output |
| Status | 5.5 | 1 | Motor A Status | Motor A LED state |
| Status | 5.6 | 1 | Motor B Status | Motor A LED state |
| Status | 5.7 | 1 | Motor System Status | System LED state |
| Status | 5.8 | 1 | not used | not used |
| Status | 6 | 8 | Motor A Current | Motor Current A in 0.1A resolution. |
| Status | 7 | 8 | Motor B Current | see above * |
| Status | 8 | 8 | Message Counter | Increments on each CAN message |

**Parameter Group Number** 65392 **Transmission Rate** 100 ms **Default System Address** 140

## MOTOR CONTROL ACCESSORIES

| Description | Part Number |
|---|---|
| **Power Cable** | 4000648-nn [1] |
| **Control Switch to Switch Bank Cable** | 4000655-nn [1] |
| **Cab Switch to Switch Bank Cable** | 4000656-nn [1] |
| **Motor Cable** | 4000651-nn [1] |
| **Limit Switch Cable** | 4000650-nn [1] |
| **CAN Bus Cable – ECU to Network** | 4000652-nn [1] |
| **CAN Bus Cable – Network Jumper** | 4000653-nn [1] |
| **CAN Bus Y-Connector** | 4008119 |
| **CAN Bus Terminator** | 4008120 |

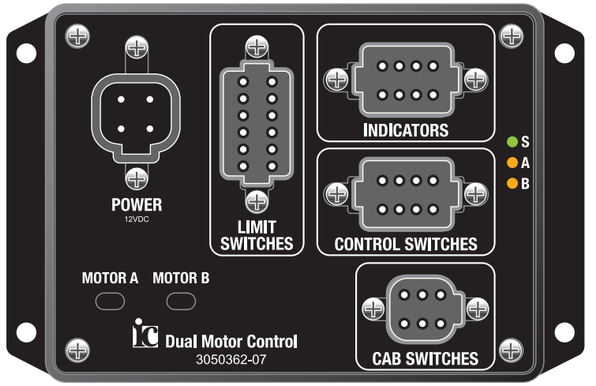
[1] nn is length in feet






**Innovative Controls Inc.** 560 Braddock Avenue East Pittsburgh,PA 15112 412-824-2264 Fax: 412-824-2339

# 3050362 Series Motor Control Modules




# DUMP VALVE AND LADDER RACK MOTOR CONTROL DELIVERED IN A SMART DESIGN

The Innovative Controls Inc. Motor Control Modules are used to operate unidirectional or bidirectional 12VDC motors and linear actuators commonly used for dump valve and ladder rack systems. These motor controls can be remotely-operated via the J1939 CAN Bus interface, hardwired switches, or relay inputs.

Clockwise and counter-clockwise limit switch and lock inputs are used to prevent the motor from driving in a particular direction. These inputs also interlock the motor to prevent it from operating when not in demand. Multiple IC Motor Controls can be networked together using J1939 CAN protocol and controlled remotely from the cab.

IC Motor Controls are ideal for fire apparatus dump valve and chute control, or ladder rack lift applications. Innovative Controls Inc can provide ready to install, out of the box dump valve control system solutions by mating the motor controls with our exterior switch bank modules, cab switch banks, and I/O multiplexer.

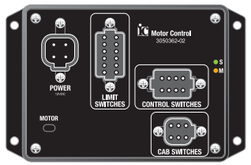
The IC Motor Controls allow fire apparatus builders to offer custom dump valve system controls while reducing design, labor, and installation time.

## FEATURES

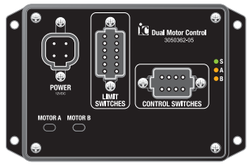
- **25A Continuous / 50A Surge Motor Current**
- **Unidirectional or Bi-Directional Operation**
- **Hardwired Control Inputs**
- **Hardwired Indicator Outputs**
- **J1939 CAN Bus Operation**
- **Clockwise and Counter-Clockwise Limit Switch Inputs**
- **Lock Inputs to Prevent Operation in either Direction**
- **Electronic Overcurrent Sensing and Protection**
- **Front Panel Status LEDs**
- **-40C to +105C (-40F to +220F) AEC-Q100 Level 2 Operating Temperature**
- **No Configuration Jumpers**
- **Potted Module for Dust and Water Ingress Protection**

## MODELS

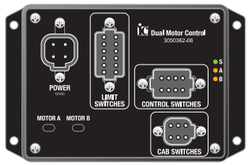
| Description | Motor Channels | CAN Bus Interface | Cab Switch Interface | Indicator Interface | Part Number |
|---|---|---|---|---|---|
| **Single Channel Motor Control** | 1 | No | No | No | 3050362-01 |
| **Single Channel Motor Control** | 1 | No | Yes | No | 3050362-02 |
| **Single Channel Motor Control** | 1 | No | Yes | Yes | 3050362-03 |
| **Single Channel Motor Control** | 1 | Yes | No | No | 3050362-04 |
| **Dual Channel Motor Control** | 2 | No | No | No | 3050362-05 |
| **Dual Channel Motor Control** | 2 | No | Yes | No | 3050362-06 |
| **Dual Channel Motor Control** | 2 | No | Yes | Yes | 3050362-07 |
| **Dual Channel Motor Control** | 2 | Yes | No | No | 3050362-08 |



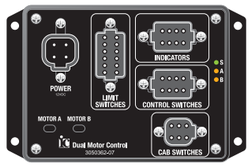

**3050362-02**
Controls one motor. Includes cab switch. Other single motor modules not shown.



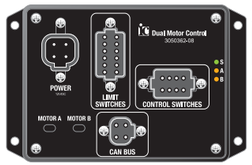

**3050362-05**
Controls two motors. Used when only one set of switches is required.



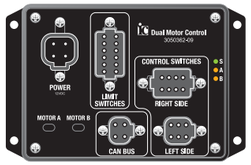

**3050362-06**
Controls two motors.Used when cab switches are required.




**3050362-07**
Controls two motors. Used when both rear body and cab switches with light indicators are required.




**3050362-08**
Dual MUX DC Motor Control with CAN BUS. Each Module will control up to two motors.

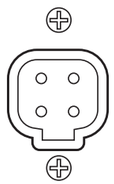



**3050362-09**
Dual MUX DC Motor Control with CAN BUS Used when redundant rear body switches are required.

# ELECTRICAL CONNECTIONS

## POWER
**Deutsch DTP15-4P Connector**

| Terminal | Description |
|---|---|
| 1 | Motor A +12VDC Power |
| 2 | Motor A Ground |
| 3 | Motor B +12VDC Power |
| 4 | Motor B Ground |



Mating connector is Deutsch DTP06-4S with WP-4S wedgelock and 0462-210-1231 sockets

## Motor A & Motor B
**Delphi 15300027 Weather Pack Connector**

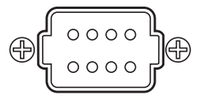
| Terminal | Description |
|---|---|
| Motor A – Pin A | Motor A – Positive Lead [1] |
| Motor A – Pin B | Motor A – Negative Lead |
| Motor B – Pin A | Motor B – Positive Lead |
| Motor B – Pin B | Motor B – Negative Lead |

Mating connector is Delphi Weather Pack Connector 12015792 with 15324981 Cable Seal and 12124581 sockets

[1] Motor polarity may need reversed to be compatible with motor direction of rotation and limit switch operation.

## CONTROL SWITCH INPUTS
**Deutsch DTP15-08PA Connector**

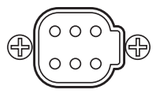
| Terminal | Description | Function |
|---|---|---|
| 1 | Close Motor A | Control input causes Motor A to close. Active with +12VDC system power. |
| 2 | Open Motor A | Control input causes Motor A to open. Active with +12VDC system power. |
| 3 | Close Motor B | Control input causes Motor B to close. Active with +12VDC system power. |
| 4 | Open Motor B | Control input causes Motor B to open. Active with +12VDC system power. |
| 5 | Backlight +12VDC | +12VDC power for switch panel backlight, 800mA maximum |
| 6 | Motor A Switch +12VDC | +12VDC system power for Motor A control switch |
| 7 | Motor B Switch +12VDC | +12VDC system power for Motor B control switch |
| 8 | Backlight Ground | Ground for switch panel backlight |



Mating connector is Deutsch DTP06-08SA with W8S wedgelock and 0462-201-16141 sockets

## CAB SWITCH INPUTS
**Deutsch DTP15-6P Connector**

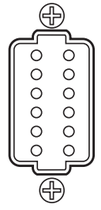
| Terminal | Description | Function |
|---|---|---|
| 1 | Close Motor A | Control input causes Motor A to close. Active with +12VDC system power. |
| 2 | Open Motor A | Control input causes Motor A to open. Active with +12VDC system power. |
| 3 | Close Motor B | Control input causes Motor B to close. Active with +12VDC system power. |
| 4 | Open Motor B | Control input causes Motor B to open. Active with +12VDC system power. |
| 5 | Backlight +12VDC | +12VDC power for switch panel backlight, 800mA maximum |
| 6 | Motor A Switch +12VDC | +12VDC system power for Motor A control switch |



Mating connector is Deutsch DTP06-6S with W6S wedgelock and 0462-201-16141 sockets

## LIMIT SWITCH INPUTS
**Deutsch DTP15-12PA Connector**

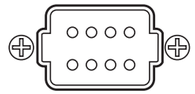
| Terminal | Description | Function |
|---|---|---|
| 1 | Motor A Open Limit | Motor A open limit switch input. Active with +12VDC system power. |
| 2 | Motor A Closed Limit | Motor A closed limit switch input. Active with +12VDC system power. |
| 3 | Ground | System Ground |
| 4 | Motor B Open Limit | Motor B open limit switch input. Active with +12VDC system power. |
| 5 | Motor B Closed Limit | Motor B closed limit switch input. Active with +12VDC system power. |
| 6 | Ground | System Ground |
| 7 | Lock B | Lock Motor B input stops motor B. Active with +12VDC system power. |
| 8 | +12VDC | +12VDC power for limit switch, 800mA maximum |
| 9 | +12VDC | +12VDC power for limit switch, 800mA maximum |
| 10 | Lock A | Lock Motor A input stops motor A. Active with +12VDC system power. |
| 11 | +12VDC | +12VDC power for limit switch, 800mA maximum |
| 12 | +12VDC | +12VDC power for limit switch, 800mA maximum |



Mating connector is Deutsch DTP06-12SA with W12S wedgelock and 0462-201-16141 sockets

## INDICATOR OUTPUTS
**Deutsch DTP15-08PB connector**

| Terminal | Description | Function |
|---|---|---|
| 1 | Motor A Open | Outputs +12VDC[1] when Motor A is neither fully open nor fully closed |
| 2 | Motor A Fully Open | Outputs +12VDC when Motor A is fully open |
| 3 | Motor B Open | Outputs +12VDC when Motor B is neither fully open nor fully closed |
| 4 | Motor B Fully Open | Outputs +12VDC when Motor B is fully open |
| 5 | Ground | System Ground |
| 6 | Motor B Fully Closed | Outputs +12VDC when Motor B is fully closed |
| 7 | Ground | System Ground |
| 8 | Motor A Fully Closed | Outputs +12VDC when Motor B is fully closed |

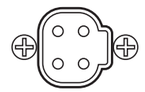


Mating connector is Deutsch DTP06-08SB with W8S wedgelock and 0462-201-16141 sockets

[1] The sum of all of the indicator outputs cannot exceed 800mA

## CAN BUS INTERFACE
**Deutsch DTP15-4P Connector**

| Terminal | Description | Function |
|---|---|---|
| 1 | CAN Hi | Control input causes Motor A to close. Active with +12VDC system power. |
| 2 | CAN Lo | Control input causes Motor A to open. Active with +12VDC system power. |
| 3 | CAN Shield | CAN cable shield for J1939-11 network requirements |
| 4 | Ground | System Ground |



Mating connector is Deutsch DTP06-4S with W4S wedgelock and 0462-201-16141 sockets

# TECHNICAL SPECIFICATIONS

| | |
|---|---|
| **Operating Voltage** | 7 to 32 VDC |
| **Power Consumption with no loads at 13.8 VDC** | 45 mA |
| **Motor Current** | 25A continuous, 35A for 2 minutes, 50A for 20 seconds |
| **Operating Temperature Range** | -40°C to +105°C (-40°F to +220°F) |
| **Storage Temperature Range** | -40°C to +105°C (-40°F to +220°F) |
| **Ingress Protection** | IP67 |
| **Electrical Protection** | Reverse voltage polarity protection on all connections<br>Internal thermal fuses<br>CAN Bus protected to 24V<br>ESD protected to J1113-13 specifications<br>Transient voltage protected to J1113-11 and J1113-42<br>Indicator outputs are protected from reverse polarity, over-current, over-voltage, and voltage transients<br>Input circuits are protected from reverse polarity, over-current, over-voltage, and voltage transients<br>Watchdog timer supervises proper execution of software |
| **SAE J1939 Protocol** | CAN 2.0B port operating at 250kbps,<br>J1939-11 or J1939-15 physical layer<br>Control commands received from PGN 65408 (0xFF80)<br>Status sent by PGN 65392-65397 (0xFF70-0xFF75) source address dependent<br>Source address range 140-145 (0x8C-0x91) |
| **Indicator Output Current Max** | High side polarity 1A |
| **Dimensions** | 6.13” wide x 4.62” high x 1.25” deep |
| **Weight** | 771 grams (1.7 pounds) |