November 24, 2021

PRODUCT NAME: Master Intake Valve- MIV 2.0
PART NUMBER: Control Module 610-00050
SUBJECT: MIV 2.0 Control via CAN

The MIV 2 Master Intake Valve can be controlled via SAE J1939 compliant CAN control network messaging. The typical Deutsch triangular connector is included in the standard harness. This application document provides the messaging needed to control the valve and monitor its status. It is up to the installer/system designer to assure no message or address conflicts exist on the network and that SAE standards are followed.

ATTENTION ⚠ CAUTION

As in any J1939 multiplexing application, physical layer details are critical to proper system operation. Installer errors in physical layer or coding errors can lead to improper or unreliable operation. Make sure all industry standards are followed for design, installation, and testing of the system.

There are still the standard hard wire connections on the harness that can operate the MIV 2.0 from the standard rocker switch. If a rocker switch is installed and there is conflict between CAN messaging and the hardwired rocker switch, the rocker switch takes priority. When the rocker switch is released, the priority reverts to the CAN messaging.

1. ADDRESSING MIV 2.0 MODULE

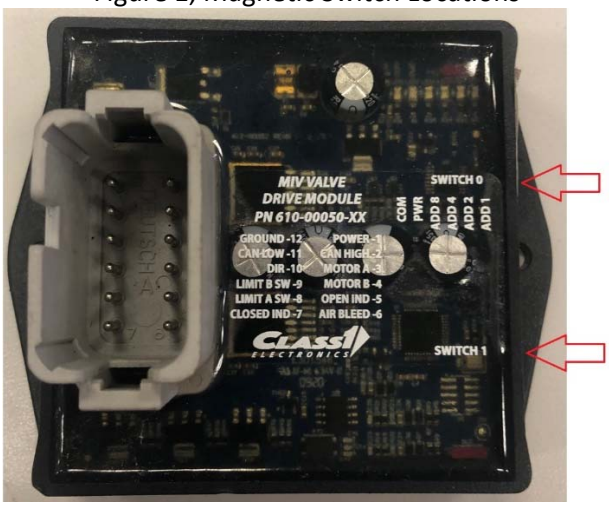
The default address for the 610-00050 module is 160 (Hex A0). If multiple MIVs are on the same CAN network, then they each must have a separate and distinct address. The MIV module can be addressed to be any address in the range of 160-169. The chart below is Hale's recommended address for each MIV location. For consistency and ease of field service it is suggested this address vs location protocol is followed.

MIV Position	MIV Position	MIV Address
Left	0	160 ($A0_{16}$)
Right	1	161 ($A1_{16}$)
Right bottom	2	162 ($A2_{16}$)
Left bottom	3	163 ($A3_{16}$)
T-port	4	164 ($A4_{16}$)
Inline	5	165 ($A5_{16}$)

The address of a MIV module can be changed with following procedure:

a. Locate the MIV2 module which is typically mounted to the MIV housing between the gear motor and the valve body.
b. With power on the module, and using a magnet and place it it at switch 1 or switch 0;
    i. Refer to figure 1 for MIV2 module switch locations.
    ii. Repeat for each switch to confirm switch actuation points.
    iii. There will be a LED confirmation of the switch input for confirmation.
c. Put in password **1001 0000** to enter the addressing menu.
d. The module will flash all lights to indicate it is at Address A0
e. Activate switch 0 to increase the module address up 1 (range is from A0-A9).
f. Activate switch 1 to confirm address change.

Figure 1, Magnetic Switch Locations



2. MIV Control Messages

Parameter Group:	**Proprietary A**
Transmission rate:	when required
Data length:	8
Data page:	0
PDU format:	239 (EF_{16})
PDU specific:	160 to 165 ($A0_{16}$ to $A5_{16}$) (MIV modules 0 through 5)
Default priority:	6
Source address:	30 ($1E_{16}$)
Parameter Group Number:	61184 ($00EF00_{16}$)

Start	bits	Parameter name	SPN	Resolution	Offset	Range
1.1	56	Not defined	---	---	-	---
8.1	1	Momentary open command	---	2 states	0	0 to 1 (0 = stop, 1 = begin)
8.2	1	Momentary close command	---	2 states	0	0 to 1 (0 = stop, 1 = begin)

Example of control messages using address A0 below:

Description	PID	Data (bytes 1-8)
Open	0x18EFA0BA	00 00 00 00 00 00 00 01
Stop Command**	0x18EFA0BA	00 00 00 00 00 00 00 00
Close	0x18EFA0BA	00 00 00 00 00 00 00 02

3. MIV Module Status Message

Parameter Group:	Proprietary A
Transmission rate:	250ms, and on change
Data length:	8
Data page:	0
PDU format:	239 (EF_{16})
PDU specific:	170 (AA_{16})
Default priority:	6
Source address:	160 to 165 ($A0_{16}$ to $A5_{16}$) (MIV modules 0 through 5)
Parameter Group Number:	61184 ($00EF00_{16}$)

Start	bits	Parameter name	SPN	Resolution	Offset	Range
1.1	1	Open limit physical input state	---	2 states	0	0 to 1 (0 = not open, 1 = open)
1.2	1	Close limit physical input state	---	2 states	0	0 to 1 (0 = not closed, 1 = closed)
1.3	1	Reserved	---	---	-	---
1.4	1	Open physical interrupt request state	---	2 states	0	0 to 1 (0 = no request, 1 = open request)
1.5	1	Close physical interrupt request state	---	2 states	0	0 to 1 (0 = no request, 1 = close request)
1.6	1	Open CAN request state	---	2 states	0	0 to 1 (0 = no request, 1 = open request)
1.7	1	Close CAN request state	---	2 states	0	0 to 1 (0 = no request, 1 = close request)
1.8	1	Reserved	---	2 states	0	0 to 1
2.1	1	Open limit switch state	---	2 states	0	0 to 1 (0 = not open, 1 = open)
2.2	1	Close limit switch state	---	2 states	0	0 to 1 (0 = not closed, 1 = closed)
2.3	1	Valve transit state	---	2 states	0	0 to 1 (0 = valve open/closed, 1 = between)
2.4	1	Valve motor state	---	2 states	0	0 to 1 (0 = stopped, 1 = moving)

Example using address A0 below:

Description	PID	Data (bytes 1-8)
Full open	0x18EFBAA0	01 01 00 00 00 00 00 00
Full closed	0x18EFBAA0	02 02 00 00 00 00 00 00
Half Open	0x18EFBAA0	00 04 00 00 00 00 00 00

Please contact Hale Customer Service Technical Support for additional information.

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