

**TM350
Video Switch
Application Document**

Feature Summary

Video Matrix

Provides a 7(in)x5(out) video switching matrix, controlled via RV-C and through dedicated inputs for turn signals and other switch signals.

General Specifications

Input Voltage	x VDC - y VDC
Input Amperage	xxx mA
Temperature Range	-40 - xxx Deg F
Environmental Limitations	Not sealed for exterior mounting.
Source Address	TBA
Default Source Address	TBA

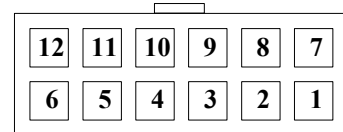
Connectors

Connector Types

All diagrams are "wire-side" view.

Receptacle - Molex 5557 Series.
12-pin 39-01-2120

Crimp-on Connectors - 5556 Series.
Part # 39-00-0039



Connector Pinouts

Main Connector

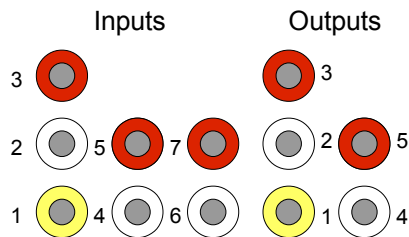
12-pin Molex

Pin	Designation	Type	Notes
1	GROUND	Ground	
2	OUTPUT	Active High Output	
3	UNUSED		No Connect
4	UNUSED		No Connect
5	J1939 DATA +	CAN +	Attach to J1939 Bus
6	J1939 DATA -	CAN -	Attach to J1939 Bus
7	POWER	12V Power Input	Attach to constant power source
8	Serial Transmit	RS-232	Do Not Connect (Used for Diagnostic purposes)
9	Serial Receive	RS-232	Do Not Connect (Used for Diagnostic purposes)
10	Serial Ground	RS-232	Do Not Connect (Used for Diagnostic purposes)
11	RV-C DATA +	CAN +	Attach to RV-C Bus

Pin	Designation	Type	Notes
12	RV-C DATA -	CAN -	Attach to RV-C Bus

Secondary Connector*12-pin Molex*

Pin	Designation	Type	Notes
1	GROUND	Ground	
2	UNUSED		
3	UNUSED		
4	INPUT 1	Active Lo Input	
5	INPUT 2	Active Lo Input	
6	OUTPUT 1	Active Lo Output	
7	REVERSE	Active High Input	
8	BLINKER1 (L)	Active High Input	
9	BLINKER2 (R)	Active High Input	
10	INPUT 3	Active High Input	
11	INPUT 4	Active High Input	
12	OUTPUT 2	Active High Output	

TM350/VMS350 - Video Connectors**CAN Interface****Base PGNS**

Supports dynamic addressing.
 PGN_REQUEST
 PGN_DM1, RV-C format, always returns an OK status.
 PRODUCT_ID
 NAME

Date and Time

Receives SET_DATE_TIME_COMMAND.
 Broadcasts DATE_TIME_STATUS in response to the command or a request.

Does not support Time Zone Offset.

J1939

TBA

General Reset

Supports Reset to Defaults (Bits 1.5-1.6)

Supports Reboot (Bits 1.1-1.2)

Proprietary Configuration

Supports Proprietary Configuration (0xEFxx)

TM350/VMS350 Video Switch PGNs**VMS350 Video Switch Configuration**

PGN:	PDU_F = 239, PDU_S = ## (Source Address) (0xEF##)	
Byte 1:	Operation	0x8E – Set Configuration 0x8D – Report Configuration
Bits 2.1-2.4	Rotary 1 State	0-13: Virtual Rotary Switch #1 State
Bits 2.5-2.8	Rotary 2 State	0-13: Virtual Rotary Switch #2 State
Bits 3.1-3.2	Momentary 1 State	0 = Off, 1 = On Momentary Switch #1 State
Bits 3.3-3.4	Momentary 2 State	0 = Off, 1 = On Momentary Switch #2 State
Bits 3.5-3.6	Momentary 3 State	0 = Off, 1 = On Momentary Switch #3 State
Bits 3.7-3.8	Momentary 4 State	0 = Off, 1 = On Momentary Switch #4 State
Bits 4.1-4.4	Rotary 1 Max State	0-13: Virtual Rotary Switch #1 Max State
Bits 4.5-4.8	Rotary 2 Max State	0-13: Virtual Rotary Switch #2 Max State
Bits 5.1-5.4	Input 1 Function	0 = Normal Switch 1 = Increment Rotary Switch #1 2 = Decrement Rotary Switch #1 3 = Increment Rotary Switch #2 4 = Decrement Rotary Switch #2 5 = Drive Momentary #1 6 = Drive Momentary #2 7 = Drive Momentary #3 8 = Drive Momentary #4
Bits 5.5-5.8	Input 2 Function	see Input 1
Bits 6.1-6.4	Input 3 Function	see Input 1
Bits 6.5-6.8	Input 4 Function	see Input 1
Byte 8	Command	0 = Report Video Switch Actions 1 = Increment Rotary 1 State 2 = Decrement Rotary 1 State 3 = Increment Rotary 2 State 4 = Decrement Rotary 2 State 5 = Report Current Video Switch State 6 = Reset to Default Configuration 7-10 = Toggle Momentary #1-4

VMS350 Video Switch State

PGN:	PDU_F = 239, PDU_S = ## (Source Address) (0xEF##)	
Byte 1:	Operation	0x8A – Report Vidswitch State

Bits 2.1-2.4	OSD	0-7 – Source. 13 = Off (0 = OSD, 1-7 = Video In)
Bits 2.5-2.8	Video Output 1 State	0-7 – Source. 13 = Off (0 = OSD, 1-7 = Video In)
Bits 3.1-3.4	Video Output 2 State	0-7 – Source. 13 = Off (0 = OSD, 1-7 = Video In)
Bits 3.5-3.8	Video Output 3 State	0-7 – Source. 13 = Off (0 = OSD, 1-7 = Video In)
Bits 4.1-4.4	Video Output 4 State	0-7 – Source. 13 = Off (0 = OSD, 1-7 = Video In)
Bits 4.5-4.8	Video Output 5 State	0-7 – Source. 13 = Off (0 = OSD, 1-7 = Video In)
Byte 5	Inputs State	Bit 0 = Input 1 Bit 1 = Input 2 Bit 2 = Input 3 Bit 3 = Input 4 Bit 4 = L Blinker (buffered) Bit 5 = R Blinker (buffered) Bit 6 = Reverse Input
Bits 6.1-6.2	Reverse Status	0 = Not in Reverse 1 = Reverse signal detected (by input or databus)
Bits 6.3-6.4	Output 1 Status	0 = Off, 1 = On <i>Available on VMS33 only if no tire option is active.</i>
Bits 6.5-6.6	Output 2 Status	0 = Off, 1 = On <i>VMS350 Only</i>

VMS350 Video Switch Action

PGN:	PDU_F = 239, PDU_S = ## (Source Address) (0xEF##)
Byte 1:	Operation 0x8C – Set Vidswitch Action 0x8B – Report Vidswitch Action
Byte 2	Action Instance 1-20 = Instance. Actions are evaluated in order from low to high.
Bits 3.1-3.4	Test Type see Table below
Bits 3.5-3.8	Test Parameter see Table below
Bits 4.1-4.4	OSD Input see Table below <i>Not Used in TM350</i>
Bits 4.5-4.6	Output 1 Action see Table below
Bits 5.1-5.4	Output 2 Action see Table below
Bits 5.5-5.6	Output 3 Action see Table below
Bits 6.1-6.4	Output 4 Action see Table below
Bits 6.5-6.6	Output 5 Action see Table below
Bits 7.1-7.4	Virtual Input 1 Action see Table below
Bits 7.5-7.6	Virtual Input 2 Action see Table below
Bits 8.1-8.4	Digital Output 1 Action 0 = Turn Off, 1 = Turn On, 2+ = No Change
Bits 8.5-8.8	Digital Output 2 Action 0 = Turn Off, 1 = Turn On, 2+ = No Change

Tests

ID	Description	Parameter Values
0	Default	Always Considered “True”. Use to establish defaults.
1	Input On	0 = Reverse, 1 = Left Blinker, 2 = Right Blinker, 3 = Input 1. 4 = Input 2, 5 = Input 3, 6 = Input 4
2	Rotary 1 State	0 – 13 = Virtual Rotary Switch State

3	Rotary 2 State	0 – 13 = Virtual Rotary Switch State
4	Momentary State	1 -4 = Momentary Switch to Test
5 - 12	Reserved	
13	No Test	

Actions

0 = Switch to OSD

1-7 = Switch source to Input 1-7

8 = Switch source to Virtual Input 1

9 = Switch source to Virtual Input 1

10 = Turn Off

11+ = No Change

Default Configuration

	Type	Parm	OSD	1	2	3	4	5	V1	V2	O1	O2
1	0	0	1	0	1	1	2	3	0	0	0	0
2	1	1	2	13	2	13	13	13	13	13	1	1
3	1	2	3	13	3	13	13	13	13	13	1	1
4	1	0	13	13	13	13	13	13	13	13	1	1
5..20	13	0	13	13	13	13	13	13	13	13	13	13

Video Output 1 will always have the OSD signal. The OSD signal will be overlaid on Source 1, 2, or 3 depending on the blinker status. Video Output 2 will show the same source, but without the OSD. The other three outputs receive the three sources full time, with no switching. The discrete outputs are driven whenever either the blinkers or the reverse are on.

Video Loop Test

To test the TM350/VMS350 Video Switch using the serial monitor, connect the video inputs and outputs as follows:

Source – Input 1
Monitor – Output 1
Input 2 – Output 2
Input 3 – Output 3
Input 4 – Output 4
Input 5 – Output 5

Video Monitor Compatibility

Weldex WDRV-6800M-R1 is incompatible!

Document Revision History

Date	By	Effective	Revision