IMAGE VIDEO
Division of 1077541 Ontario Limited

MODEL 4211
8 CHANNEL EXPANDABLE INTERFACE
IV# 134-0046-13

Image Video
Division of 1077541 Ontario Limited
1620 Midland Ave.
Scarborough, Ontario,
Canada M1P 3C2

Model 4211
8 Channel Expandable Interface Unit

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1 INTRODUCTION

1.1 PREFACE

The Image Video Model 4211 8 Channel Expandable Interface is a serial to parallel control converter. It allows devices that are controlled and monitored by one or more single wire connections to be controlled from a remote computer or system controller via a serial line. The purpose and operation of each parallel I/O channel is a function of the software in the remote computer or system controller.

The interface units are available with 8, 16, 24, 32, and 40 channels of inputs and outputs. Each configuration is available with many input and output options. The 8 and 16 channel versions are housed in a 1RU chassis, the 24, 32, and 40 channel versions are housed in a 2RU chassis.

1.2 GENERAL DESCRIPTION

The unit consists of a main module and up to four I/O expansion modules. The main module contains the unit's microprocessor, serial data interface, DIP switch, status indicator, power supply, and 8 channels of parallel I/O. The expansion modules each contain 8 channels of parallel I/O.

Parallel I/O

There are 4 parallel output options: contact closure, pull-to-ground, voltage source, or none. The contact closure option provides isolated outputs via relay contacts. The pull-to-ground and voltage source options provide non-isolated outputs via switching transistors.

There are 3 input options: voltage sense, pull-to-ground / contact closure, and none. The voltage sense option provides optically isolated inputs. The pull-to-ground / contact closure options provide non-isolated inputs.

The parallel I/O connections are made to 37 pin male 'D' sub-miniature connectors. Each connector provides 8 outputs and 8 inputs.

Serial Control

The interface unit is controlled via a full-duplex RS-485 multi-drop serial bus. The interface unit is connected to the serial bus via a 9 pin 'D' sub-miniature connector. Up to 32 interface units can be connected to the serial bus. A DIP switch accessible on the rear of the chassis uniquely addresses each unit.

The serial control protocol runs at 38,400 bps; this high speed allows a group of 8 inputs and outputs to be interrogated and controlled in less than 3mS. The maximum 64 groups (512 inputs and outputs) allowed by the control protocol could be interrogated and controlled in less than 500mS.

Power Supply

All 4211 interface units except those with voltage source outputs are equipped with an external wall mount power supply. For the voltage source version the customer must provide a power supply that provides +9 to +35VDC.

1.3 DIP SWITCH

Switches 1 to 6 of the DIP switch are used to set the group number of the first parallel I/O connector. The unit's other parallel I/O connectors will be assigned consecutive group numbers. The unit will accept groups number between 0 and 63. The device controlling the 4211 Interface may impose restrictions on the allowed group numbers. Switches 7 and 8 of the DIP switch are unused.

The table below gives the DIP switch settings for the 64 group numbers. 'D' means the switch is down, 'U' means the switch is up. Refer to the rear view drawings for the position and orientation of the DIP switch.

Table 1: DIP Switch Settings

Group	Switch 123456	Group	Switch 123456	Group	Switch 123456	Group	Switch 123456
0	DDDDDD	16	DDDDUD	32	DDDDDU	48	DDDDUU
1	UDDDDD	17	UDDDUD	33	UDDDDU	49	UDDDUU
2	DUDDDD	18	DUDDUD	34	DUDDDU	50	DUDDUU
3	UUDDDD	19	UUDDUD	35	UUDDDU	51	UUDDUU
4	DDUDDD	20	DDUDUD	36	DDUDDU	52	DDUDUU
5	UDUDDD	21	UDUDUD	37	UDUDDU	53	UDUDUU
6	DUUDDD	22	DUUDUD	38	DUUDDU	54	DUUDUU
7	UUUDDD	23	UUUDUD	39	UUUDDU	55	UUUDUU
8	DDDUDD	24	DDDUUD	40	DDDUDU	56	DDDUUU
9	UDDUDD	25	UDDUUD	41	UDDUDU	57	UDDUUU
10	DUDUDD	26	DUDUUD	42	DUDUDU	58	DUDUUU
11	UUDUDD	27	UUDUUD	43	UUDUDU	59	UUDUUU
12	DDUUDD	28	DDUUUD	44	DDUUDU	60	DDUUUU
13	UDUUDD	29	UDUUUD	45	UDUUDU	61	UDUUUU
14	DUUUDD	30	DUUUUD	46	DUUUDU	62	DUUUUU
15	UUUUDD	31	UUUUUD	47	UUUUDU	63	UUUUUU

1.4 STATUS INDICATOR

The red LED indicator on the front of the unit indicates the operational state of the 4211 Interface. The LED illuminates steadily while the unit is receiving regular update messages for its I/O channels. The LED will blink for .4 seconds on and 1.2 seconds off if the unit is receiving valid messages but more than 2 seconds have elapsed since the last message was received for its I/O channels. The LED will blink for .2 seconds on and .2 seconds off if more than 5 seconds have elapsed since any valid message has been received.

2 INSTALLATION

2.1 GENERAL INFORMATION

This section of the manual is intended to assist the user in the hook-up and connection of the 4211 Interface Unit. It is strongly recommended that all personnel involved in the connection process become familiar with these procedures prior to installation of the unit.

2.2 SERIAL CONTROL

The 4211 Interface Unit is controlled and interrogated via a multidrop RS-485 serial link. The serial line is connected to the unit via the 9-pin female 'D' type connector labelled CONTROL. The pinout of the connector is listed below.

Table 2: Serial Control Connector Pinouts

Pin	*function*
7	transmit data from the 4211
2	inverted transmit data from the 4211
6	transmit data common
3	receive data to the 4211
8	inverted receive data to the 4211
4	receive data common
1	Model 4211 chassis ground
9	Model 4211 chassis ground

2.3 PARALLEL I/O

The parallel inputs and outputs are accessed at the 4211 Interface Unit via 37 pin male 'D' type connectors, located at the rear of the unit. Each connector provides eight channels of parallel I/O as detailed in the table below.

Table 3: Parallel I/O Connector Channels

Connector	*I/O*
PARALLEL I/O 1	1 to 8
PARALLEL I/O 2	9 to 16
PARALLEL I/O 3	17 to 24
PARALLEL I/O 4	25 to 32
PARALLEL I/O 5	33 to 40

The specifications and pinouts of the various types of inputs and outputs are detailed below. The pinout tables list only the pins that apply to the particular type of input or output.

2.3.1 Voltage sense inputs

A voltage sense input is activated when a voltage of 5 to 24VDC is applied to its connector pins. The input current is internally limited to a maximum of 6mA. The voltage sense inputs are optically isolated from the Model 4211 circuit. To maintain the isolation between the external device and the 4211 interface, the external device must supply the power for the inputs. If isolation is not required, or if the external device is unable to supply the power for the input, the +5V and circuit ground connections can be used to power the inputs.

Table 4: Voltage Sense Input Pinouts

Pin	*Function*	*pin*	*Function*
11	Parallel input 1+	1	Model 4211 chassis ground
29	Parallel input 1–	20	Model 4211 circuit ground
12	Parallel input 2+	19	current limited +5V supply
30	Parallel input 2–	37	Model 4211 circuit ground
13	Parallel input 3+		
31	Parallel input 3–		
14	Parallel input 4+		
32	Parallel input 4–		
15	Parallel input 5+		
33	Parallel input 5–		
16	Parallel input 6+		
34	Parallel input 6–		
17	Parallel input 7+		
35	Parallel input 7–		
18	Parallel input 8+		
36	Parallel input 8–		

2.3.2 Contact closure / Pull-to-ground inputs

A contact closure / pull-to-ground input is activated when the path between the parallel input + pin and the circuit ground pin is closed. The external device closing the path must be capable of switching 6mA. The open circuit voltage on the input + pin is +5VDC.

Table 5: Contact Closure / Pull-To-Ground Input Pinouts

Pin	*function*	*Pin*	*Function*
11	Model 4211 circuit ground	1	Model 4211 chassis ground
29	Parallel input 1 +	20	Model 4211 circuit ground
12	Model 4211 circuit ground		
30	Parallel input 2 +	37	Model 4211 circuit ground
13	Model 4211 circuit ground		
31	Parallel input 3 +		
14	Model 4211 circuit ground		
32	Parallel input 4 +		
15	Model 4211 circuit ground		
33	Parallel input 5 +		
16	Model 4211 circuit ground		
34	Parallel input 6 +		
17	Model 4211 circuit ground		
35	Parallel input 7 +		
18	Model 4211 circuit ground		
36	Parallel input 8 +		

2.3.3 Voltage source outputs

The voltage source outputs can provide up to 150mA of current. The output voltage is equal to the 4211 power supply input voltage minus the drop across the output switching transistor (this is approximately .4V at a 150mA load).

Table 6: Voltage Source Output Pinouts

Pin	*Function*	*Pin*	*Function*
3	voltage source output 1 +	1	Model 4211 chassis ground
21	Model 4211 circuit ground	20	Model 4211 circuit ground
4	voltage source output 2 +		
22	Model 4211 circuit ground	37	Model 4211 circuit ground
5	voltage source output 3 +		
23	Model 4211 circuit ground		
6	voltage source output 4 +		
24	Model 4211 circuit ground		
7	voltage source output 5 +		
25	Model 4211 circuit ground		
8	voltage source output 6 +		
26	Model 4211 circuit ground		
9	voltage source output 7 +		
27	Model 4211 circuit ground		
10	voltage source output 8 +		
28	Model 4211 circuit ground		

2.3.4 Pull-to-Ground outputs

The pull-to-ground outputs can sink up to 150mA of current. The open circuit voltage range on the output is between 0 and +30VDC.

Table 7: Pull-to-Ground Output Pinouts

Pin	*function*	*Pin*	*function*
3	pull-to-ground output 1 +	1	Model 4211 chassis ground
21	Model 4211 circuit ground	20	Model 4211 circuit ground
4	pull-to-ground output 2 +		
22	Model 4211 circuit ground	37	Model 4211 circuit ground
5	pull-to-ground output 3 +		
23	Model 4211 circuit ground		
6	pull-to-ground output 4 +		
24	Model 4211 circuit ground		
7	pull-to-ground output 5 +		
25	Model 4211 circuit ground		
8	pull-to-ground output 6 +		
26	Model 4211 circuit ground		
9	pull-to-ground output 7 +		
27	Model 4211 circuit ground		
10	pull-to-ground output 8 +		
28	Model 4211 circuit ground		

2.3.5 Contact closure outputs

The contact closure outputs are rated at maximum of 50V, .5A, and 10W.

Table 8: Contact Closure Output Pinouts

Pin	*Function*
3	contact closure output 1
21	contact closure output 1
4	contact closure output 2
22	contact closure output 2
5	contact closure output 3
23	contact closure output 3
6	contact closure output 4
24	contact closure output 4
7	contact closure output 5
25	contact closure output 5
8	contact closure output 6
26	contact closure output 6
9	contact closure output 7
27	contact closure output 7
10	contact closure output 8
28	contact closure output 8

2.4 POWER

The Model 4211 Interface Unit is powered from an external power source that supplies between +9 and +35VDC. The voltage is regulated internally for the 4211 circuitry.

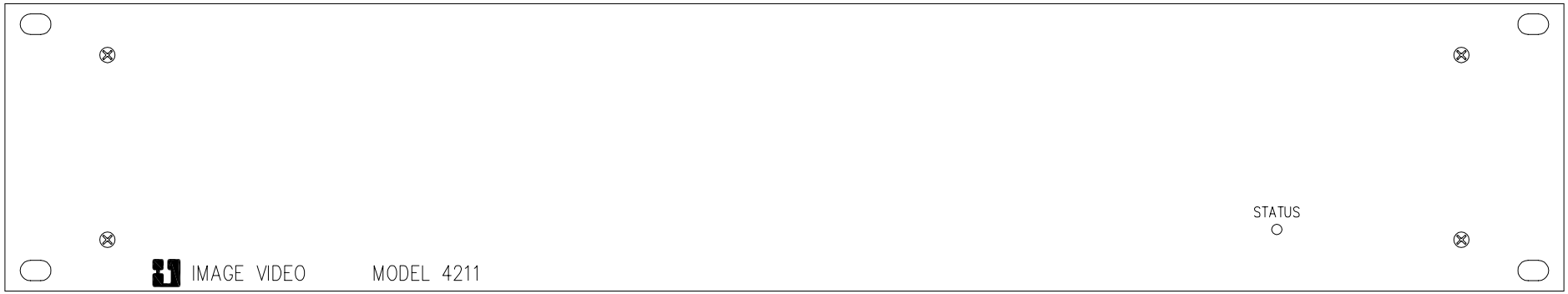
The power required is dependent upon the number of channels installed, the types of parallel inputs and outputs. For units that do not have voltage source outputs the maximum power required is 10W. For units with voltage source outputs the power required is 10W plus the power required by the external driven device.

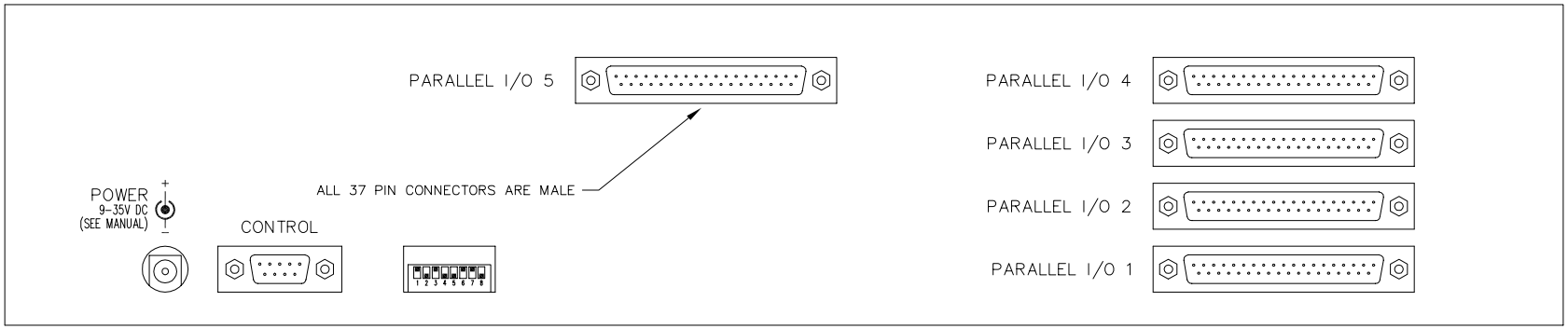
A wall mount power supply is supplied with Model 4211 Interface units that do not have voltage source outputs.

A power supply mating connector (coaxial power plug with a 2.5mm center pin, Switchcraft 760 or equivalent) is supplied with Model 4211 Interface units that have voltage source outputs. The connector should be wired according to the table below.

Table 9: Power Supply Connector Pinouts

Pin	*function*
center	+9VDC to +35VDC
sleeve	GROUND





Notes: 1. Unit dimensions are 19.00" wide x 3.50" (2 RU) high x 3.06" deep

	ARTWORK ISSUE	DESCRIPTION	DATE	ECO	REV.
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