
EBS01A

Encoder Box Switch

User Manual Rev 1.6

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Date	Revision	
September 2007	1.0	First issue
January 2008	1.1	Containing changes from version hw1.2 With the addition of Split1 and Split2 processes
February 2008	1.2	With corrections in diagrams at pages 19/21/24/25 Configuration diagram layout modified
June 2008	1.3	Page 14 terminals numbering page 15/16 terminals tables
September 2011	1.4	Page6 Table1 changed Page8 Power line schematic error numbering 19x Page8 Power line schematic error connection jumpers 112 & 113
January 2012	1.5	Page5 Warning using digital inputs
January 2012	1.6	Page 24 change table

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1.- Encoder Box Switch EBS01A

The Encoder Box Selector EBS is an interface card that facilitates the connection and adaptation of signals between control devices and encoders. Housed in a solid metallic container with a DIN bar hook, the card can easily be installed in electrical panels, and is configurable for a variety of operating modes, comprising a useful test function.

The EBS01A can manage four complete encoder inputs formed by A,B,Z signals, both in a differential and push-pull configuration. To increase noise immunity, each input is processed by a digital filter. Output drivers on the dell'EBS01A can be associated to any of the encoder inputs, whether in local or remote, via the optoisolated digital inputs. Each output can be powered in

Output 1	Output 2	Output 3	Output 4	Digital input selection
Opto 1 (option)1	Opto 2 (option)	Opto 3 (option)	Opto 4 (option)	Linear regulator V1
Control Logic				Linear regulator V2
				Linear regulator V3
				Linear regulator V4
Encoder input 1	Encoder input 2	Encoder input 3	Encoder input 4	Switching 5V

Figure 1: block layout of EBS01A card

different modes, selecting among the available voltage settings on the card or using a separate external source. In this latter case, the output can be optoisolated adding the optional circuit EBS01A-OPTO. Each output is capable of dispensing 90mA (30mA per channel); the outputs can be connected in parallel when a higher current is required.

Operating mode

The EBS01A card has three operating modes that can be easily selected using the jumpers on the card.

Warning: if you use the digital input selection n.61, n.62, n.63, n.64 verify that the hardware revision is greater than or equal to version 1.3

1.1 - Buffer mode

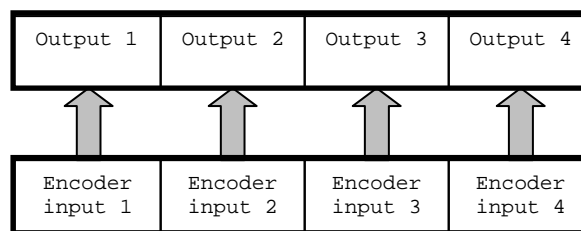


Figure 2: Operation in Buffer mode

In this case, each of four outputs reproduces the status of the corresponding input.

1.2 - SI split I mode

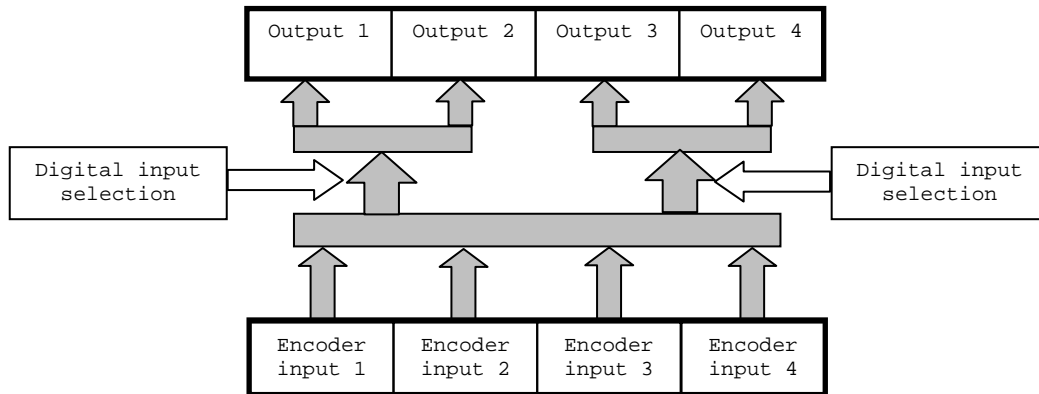


Figure 3: Operation in Split I mode

In SI split 1 operating mode, the outputs are subdivided into two pairs; O1,O2 and O3,O4. Each pair reproduces the signals of the selected input encoder via the digital inputs, as described in the table below:

Table 1: Selection of encoder inputs in relation to the digital inputs

Digital Inputs		Output 1,2	Digital Inputs		Output 3,4
I2	I1		I4	I3	
0	0	InputEncoder1	0	0	InputEncoder3
0	1	InputEncoder2	0	1	InputEncoder4
1	0	InputEncoder3	1	0	InputEncoder1
1	1	InputEncoder4	1	1	InputEncoder2

1.3 - SII split II mode

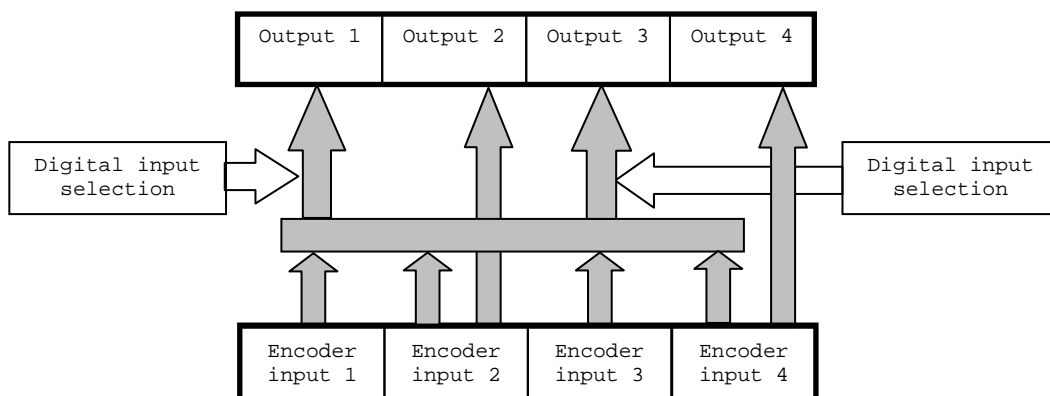


Figure 4: Operation in Split II mode

In SII split 2 mode, the outputs O2 and O4 always reproduce the signals of the corresponding inputs I2 and I4, without considering the configuration of the digital inputs, whereas the operation of the outputs O1 and O3 remains as described in Split 1 mode.

1.4- Test mode

In this case, an encoder signal A/B/Z of 32 pulses/cycle at a frequency of 31.25KHz is simulated on all four outputs.

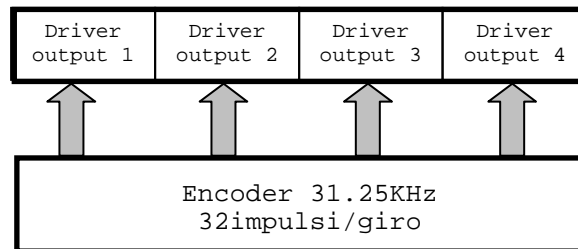


Figure 5: Operation in Test mode

1.5 - Incoming signals filter

To increase the EBS01A card's noise immunity, all encoder signal inputs are sampled by the control logic with a programmable frequency. The four available acquisition frequencies are indicated in the table below:

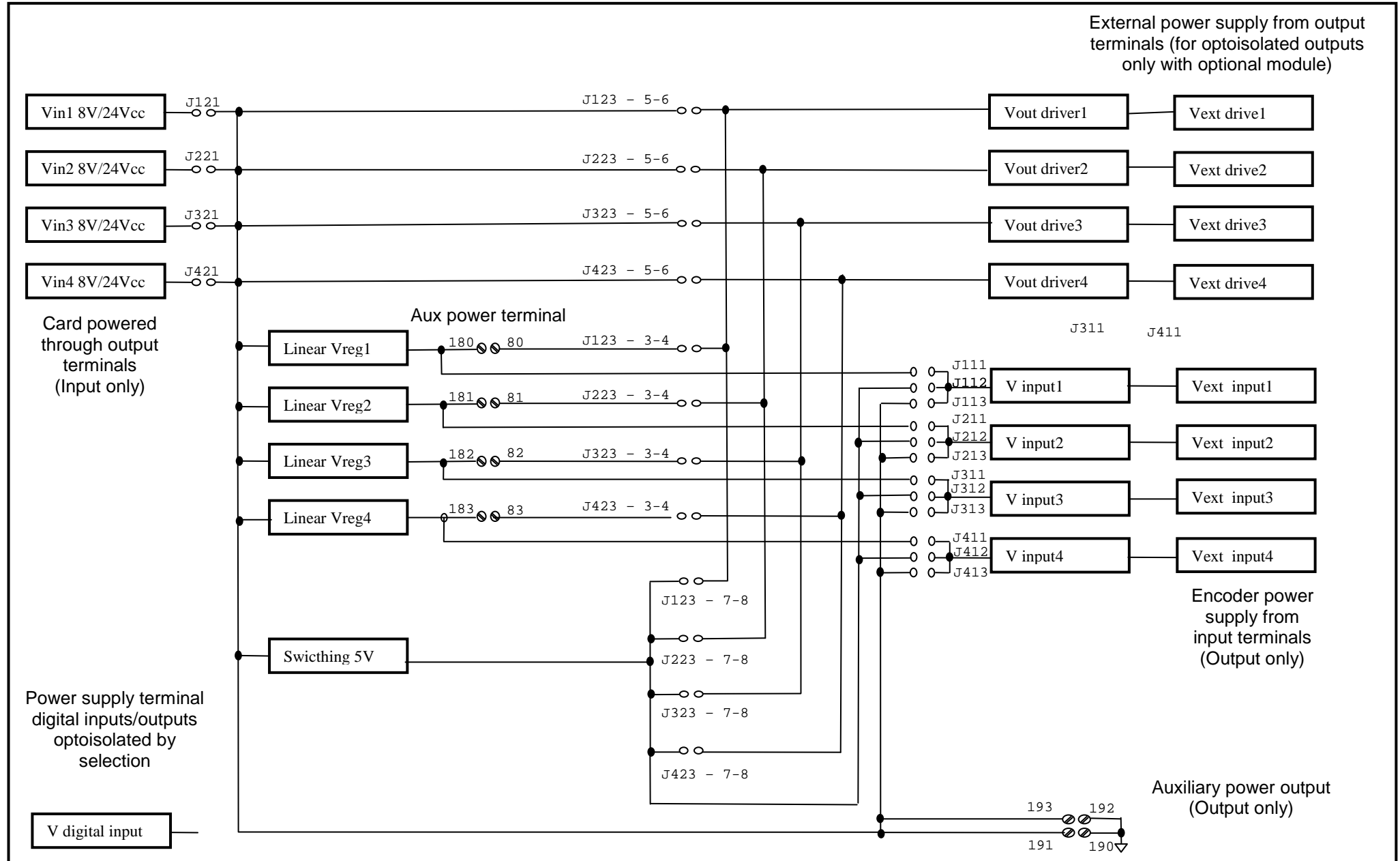
Table2: filter reading incoming encoder signals

Selection	Acquisition frequency	Output delay
00	125KHz	16us
01	250KHz	8us
10	500KHz	4us
11	1MHz	2us

The control logic compares the last three acquisitions and applied the 2 out of 3 majority criteria to establish the value of the corresponding output signal. The minimum delay between input and output is therefore 2us. Diminishing the sampling frequency increases noise immunity, but also increases the delay between signal input and output.

1.6 – Powering the card

The EBS01A interface card can be powered from any of the power inputs on the terminals on the output side. Inside, the card features four independently settable linear regulators. Each of these can provide an output varying from 8 and 24V and dispenses a maximum current of 300mA. The regulator output is protected against polarity inversion and short circuits by a 0.3A self-resetting fuse. The card also includes a switching regulator with a 5V output that is used to power the card internally and is available to power the input/output sections. The regulator output is protected by a self-resetting fuse; internally, the card absorbs approx. 0.5A, so that 0.5A remain available for the input/output drivers. The block diagram below illustrates possible combinations for the card power regulators:



2.- Technical specifications:

2.1 - Absolute maximum rating:

Supply voltage	V_{CC}	8V÷30V
Operating temperature	T_F	0°C÷85°C
Voltage on selection digital inputs	V_M	8V _{CC} ÷30V _{CC}

2.2 – Recommended parameters:

Supply voltage	V_{CC}	10V _{CC} ÷24V _{CC}
Absorption (No load applied to terminals)	$I_{CC1}(V_{CC}=15V)$	200mA

2.3 - Differential encoder input

Supply voltage	V_{CCIE}	5V÷24V
Input signal voltage	V_{IN}	±V _{CCIE}
Lo/Hi input switching threshold voltage		±1,2V
Absorption	$V_{IN} = 5V$ $V_{IN} = 12V$ $V_{IN} = 24V$	3mA 6mA 11mA
Input impedance	R_{IN}	2.2 K Ω
Maximum frequency of input signal	F_{IN}	60KHz

2.4 - Push-pull encoder input

Supply voltage	V_{CCIE}	5V÷24V
Input signal voltage	V_{IN}	0V÷ V_{CCIE}
Lo/Hi input switching threshold voltage		1,2V
Absorption	$V_{IN} = 5V$ $V_{IN} = 12V$ $V_{IN} = 24V$	4mA 10mA 20mA
Input impedance		1.2 K Ω

2.5 – Output driver

Supply voltage	V_{CCOE}	5V÷24V
Absorption	$I_{OUT} = 0mA$ (no load) $I_{OUT} = 10mA$ channel $I_{OUT} = 25mA$ channel	10mA 40mA 85mA
Maximum current dispensed by each channel ⁽¹⁾	I_{OUTMAX}	25mA
Maximum frequency		60KHz

⁽¹⁾The maximum current dispensed depends on the card's operating conditions as illustrated in the graph at figure 6

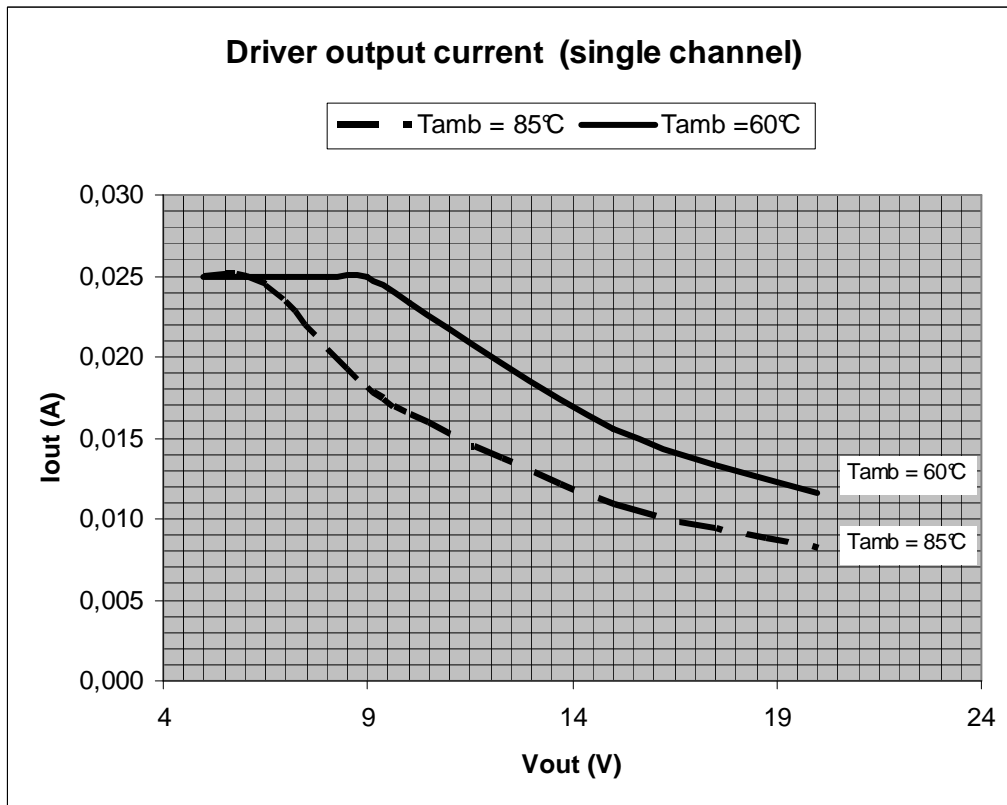


Figure 6 - current dispensed by each output differential channel

2.6 –Digital inputs

Supply voltage	V_{CC1}	8V÷24V
Digital input voltage		0V÷ V_{CC1}
Lo to Hi threshold voltage		tbd
Lo threshold voltage		tbd
Input absorption	$V_{CC1} = 24V$	0.25mA
Maximum frequency of input signal		1KHz
Input impedance		100Kohm
Digital output voltage	V_{OUTIH} V_{OUTIL}	V_{CC1} 0.25V
Output current	$V_{OUTI} \leq 0,25V$	20mA

2.7 – Adjustable power supply outputs

Output voltage	V_{REGx}	$8V \div (V_{CC} - 2V)$
Current dispensed ⁽²⁾	I_{REGx}	300mA

⁽²⁾ The maximum current dispensed depends on operating conditions, as illustrated in the graph at figure 7

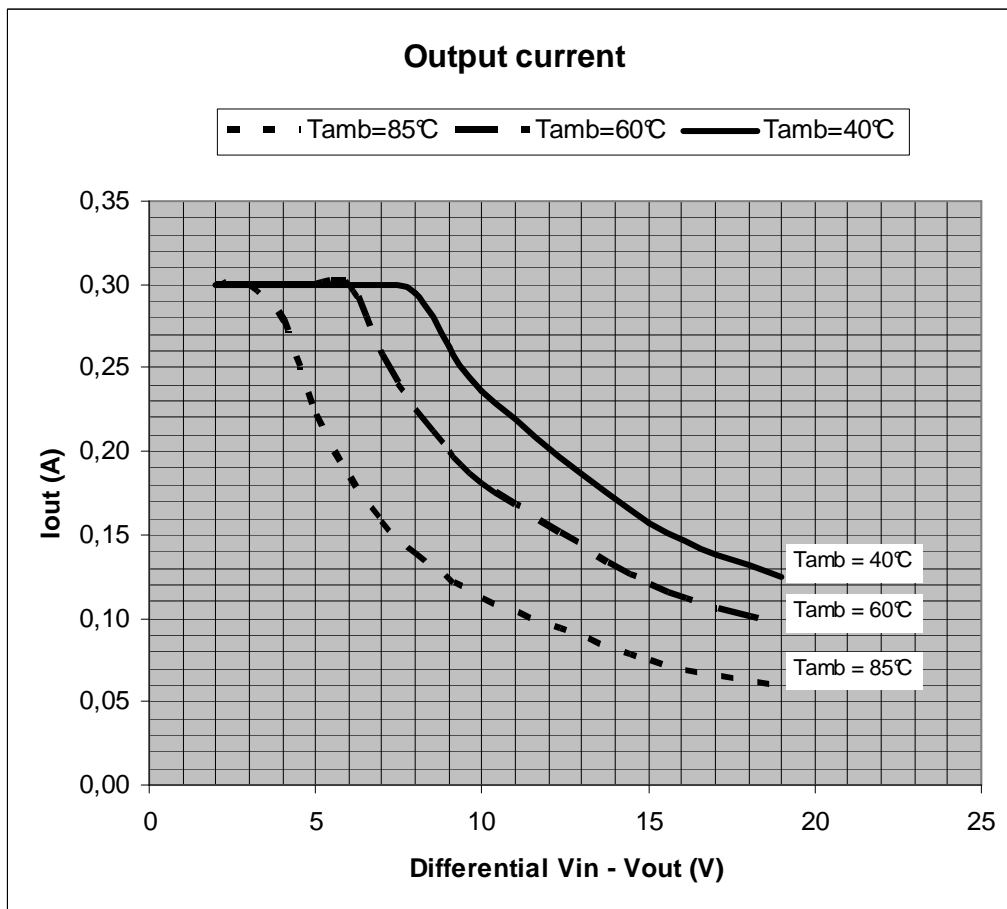
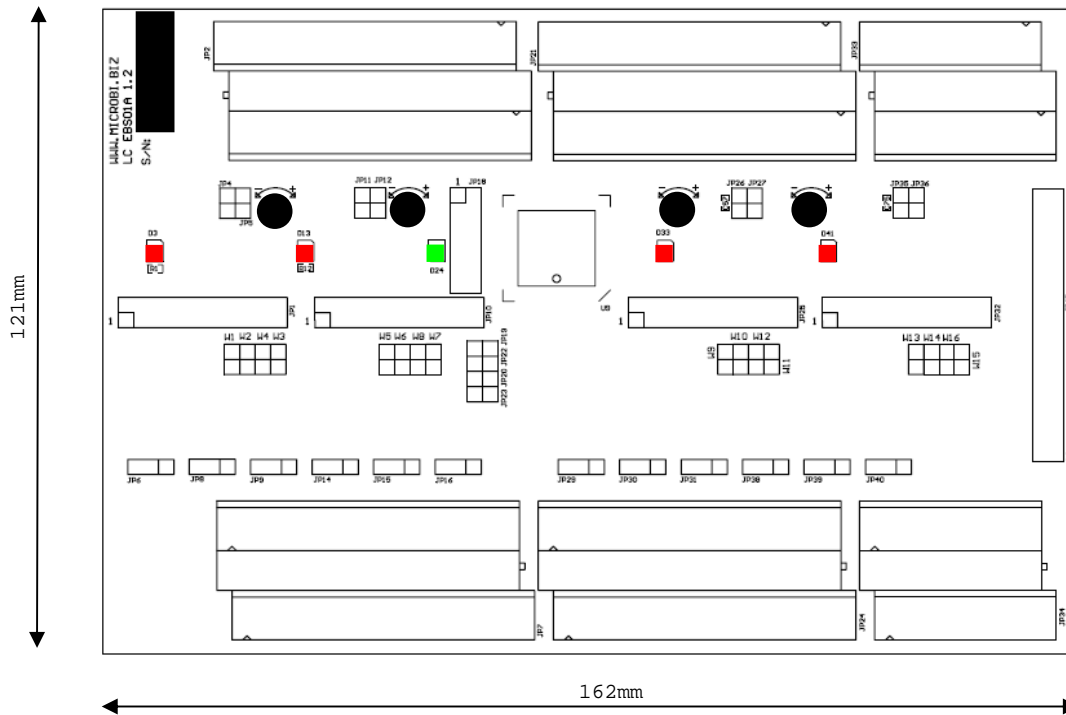


Figure 7 - Variable voltage linear regulator: current dispensed with respect to the voltage difference between the regulator input and output

2.8 - Mechanical dimensions:

Clearance	Max height with terminals inserted	161x121x85mm
Terminals	Insertion type	Section conductors max 2.5mm ²



Indication of configuration jumpers

Jxx <input type="checkbox"/>	Jumper not inserted
Jxx <input checked="" type="checkbox"/>	Jumper inserted

Jxx = code identifying jumpers

2.9 – Terminal Numbering

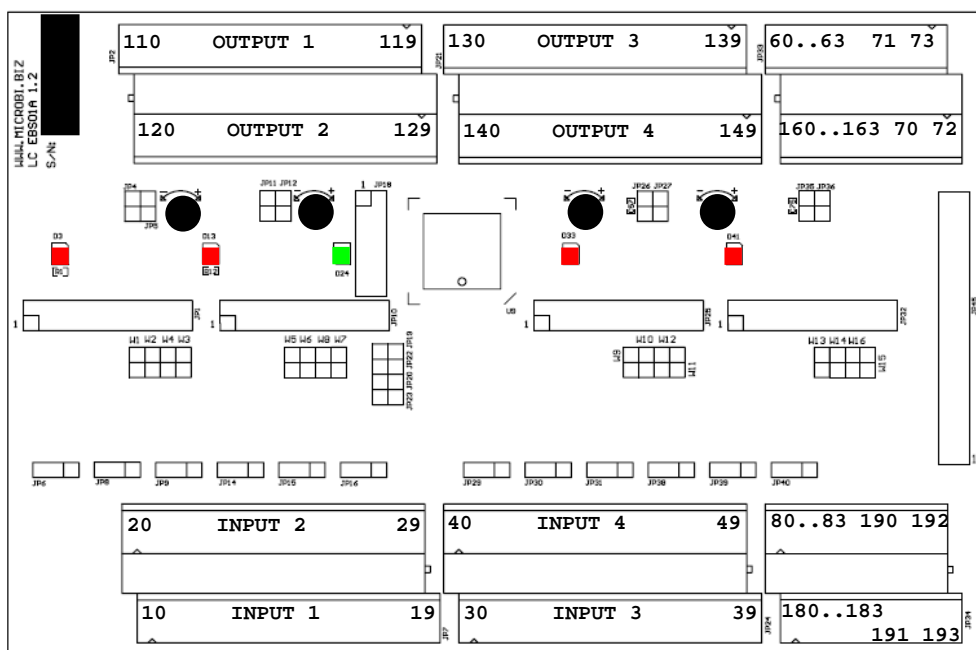


Figure 8 - EBS01A terminals numbering

2.10 – Terminals on output side (Top)

Table 3: Terminals numberings on output side (top)

Driver output 1 (ID = 110 ÷ 119)										
ID	110	111	112	113	114	115	116	117	118	119
signal	A+	A-	B+	B-	Z+	Z-	0V	V+	SHIELD	NC
Driver output2 (ID = 120 ÷ 129)										
ID	120	121	122	123	124	125	126	127	128	129
signal	A+	A-	B+	B-	Z+	Z-	0V	V+	SHIELD	NC
Driver output 3 (ID = 130 ÷ 139)										
ID	130	131	132	133	134	135	136	137	138	13
signal	A+	A-	B+	B-	Z+	Z-	0V	V+	SHIELD	NC
Driver output 4 (ID = 140 ÷ 149)										
ID	140	141	142	143	144	145	146	147	148	149
signal	A+	A-	B+	B-	Z+	Z-	0V	V+	SHIELD	NC

Digital Input (ID = 60 ÷ 63 160 ÷ 163 70 ÷ 73)						
ID	160	161	162	163	70	72
signal	DOUT1	DOUT2	DOUT3	DOUT4	IN_0V	IN_0V
ID	60	61	62	63	71	73
signal	DIN1	DIN2	DIN3	DIN4	VDIN+	VDIN+

Digital Input Terminal		
160	DOUT1	Feedback output - digital input 1
161	DOUT2	Feedback output - digital input 2
162	DOUT3	Feedback output - digital input 3
163	DOUT4	Feedback output - digital input 4
70	INGND	Digital inputs regulator reference - optoisolated side
72	INGND	Digital inputs regulator reference - optoisolated side
60	DIN1	Selection digital input 1
61	DIN2	Selection digital input 2
62	DIN3	Selection digital input 3
63	DIN4	Selection digital input 4
71	VDIN+	Optoisolated section regulator input - digital inputs
73	VDIN+	Optoisolated section regulator input - digital inputs

2.11 - Terminals on encoder input side (Bottom)

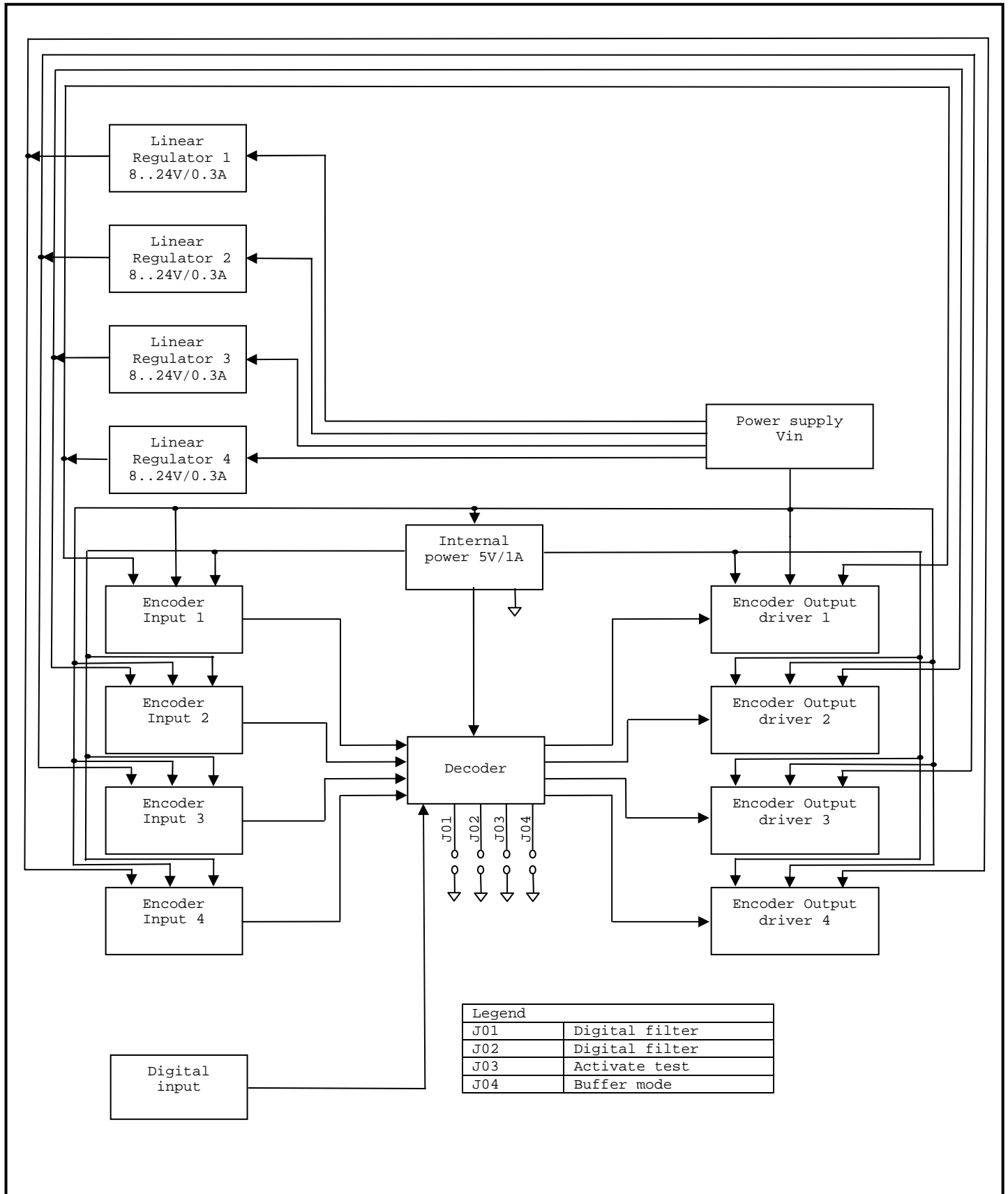
Table 3: Terminals numberings on input side (bottom)

Encoder input 1 (ID = 10 ÷ 19)										
ID	10	11	12	13	14	15	16	17	18	19
signal	A+	A-	B+	B-	Z+	Z-	0V	V+	SHIELD	NC
Encoder input 2 (ID = 20 ÷ 29)										
ID	20	21	22	23	24	25	26	27	28	29
signal	A+	A-	B+	B-	Z+	Z-	0V	V+	SHIELD	NC
Encoder input 3 (ID = 30 ÷ 39)										
ID	30	31	32	33	34	35	36	37	38	3
signal	A+	A-	B+	B-	Z+	Z-	0V	V+	SHIELD	NC
Encoder input 4 (ID = 40 ÷ 49)										
ID	40	41	42	43	44	45	46	47	48	49
signal	A+	A-	B+	B-	Z+	Z-	0V	V+	SHIELD	NC

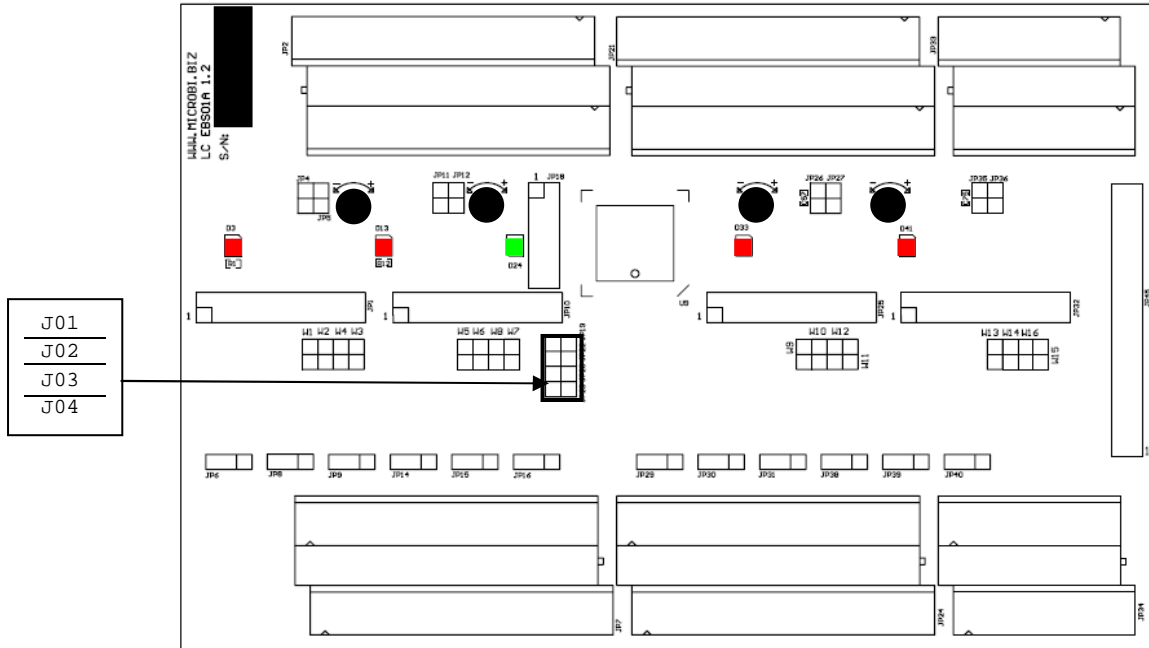
Aux power (ID = 80 ÷ 83 180 ÷ 183 190 ÷ 193)						
ID	80	81	82	83	190	192
signal	VDRV1	VDRV2	VDRV3	VDRV4	0V	0V
ID	180	181	182	183	191	193
signal	VREG1	VREG2	VREG3	VREG4	VPWR	VPWR

Aux Power Terminal		
80	VDRV1	Drive regulator input 1
81	VDRV2	Drive regulator input 2
82	VDRV3	Drive regulator input 3
83	VDRV4	Drive regulator input 4
190	GND	Regulator reference
192	GND	Regulator reference
180	VREG1	Adjustable regulator output 1
181	VREG2	Adjustable regulator output 2
182	VREG3	Adjustable regulator output 3
183	VREG4	Adjustable regulator output 4
191	VPWR	Power output
193	VPWR	Power output

Appendix A EBS01 – Encoder Card/ Encoder Board



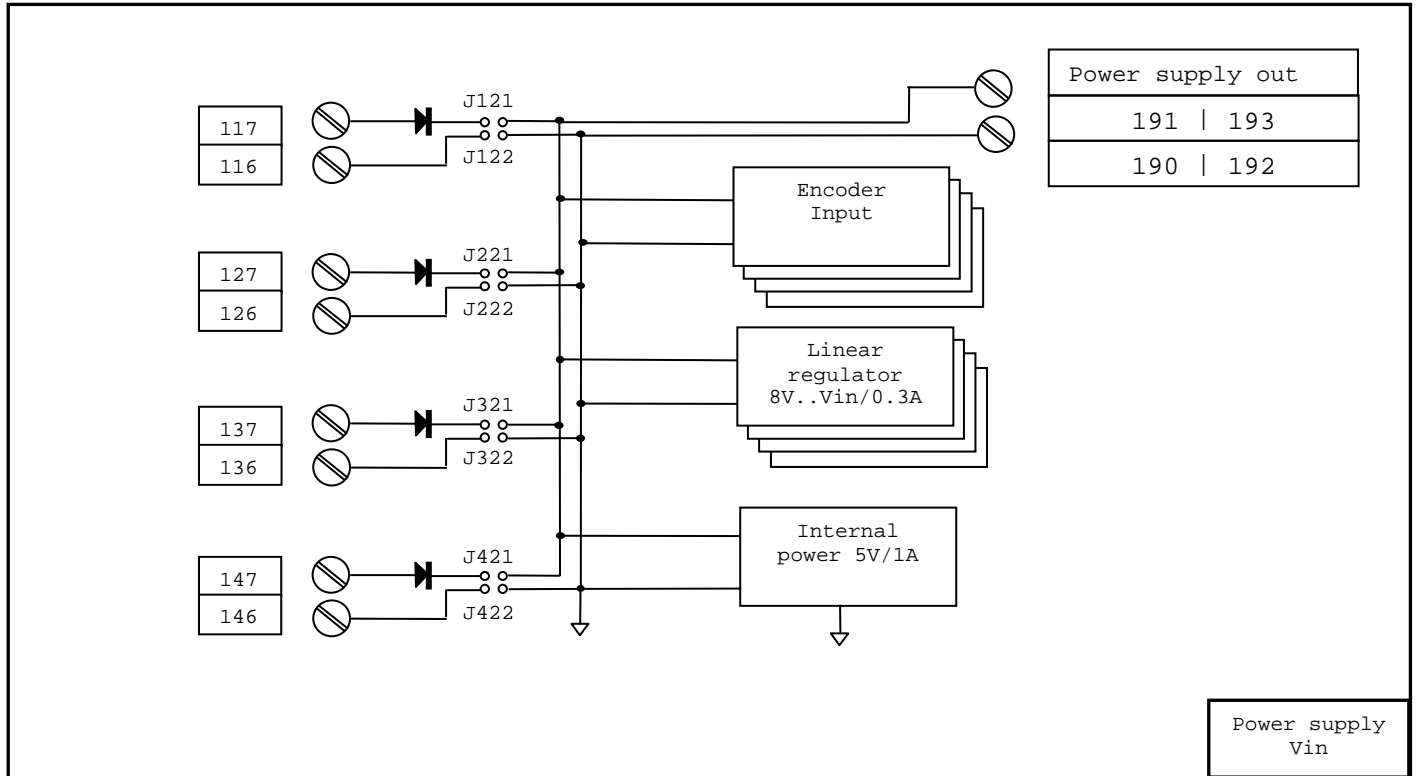
A.1 – Position of jumpers in operating mode selection



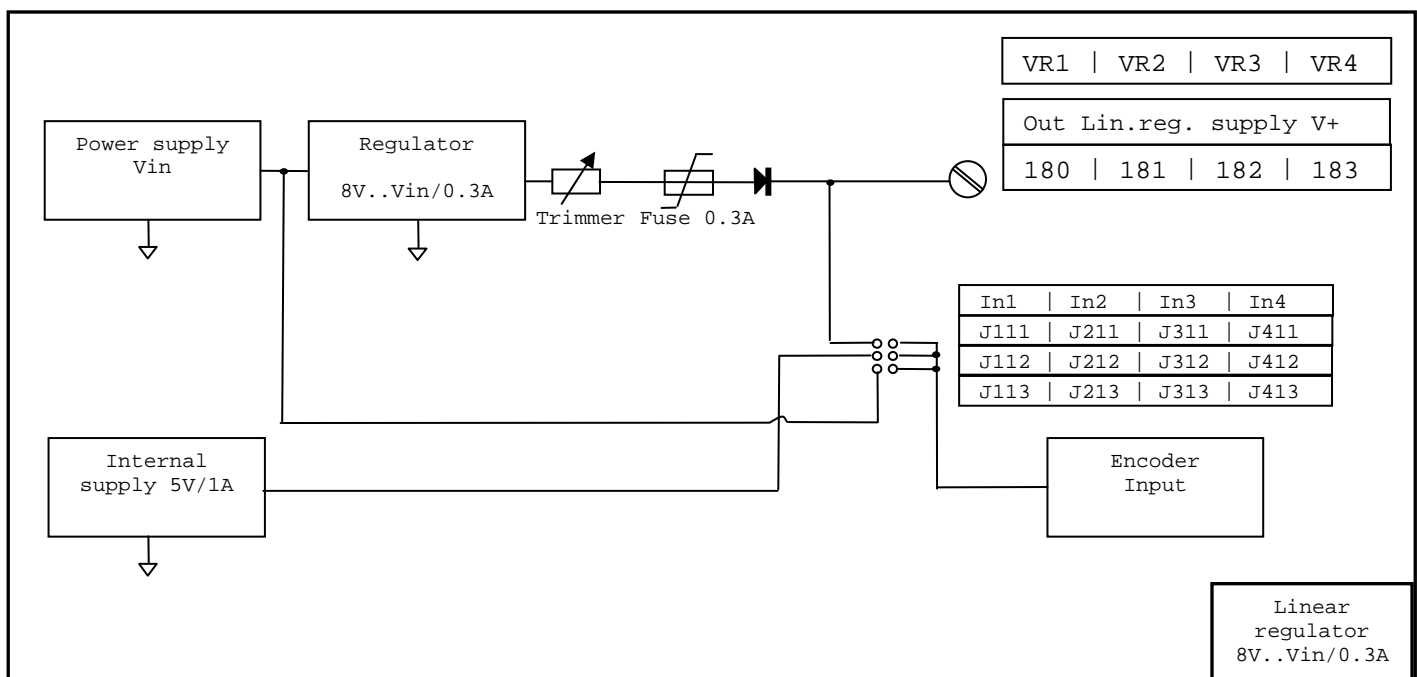
<p>J01 <input type="checkbox"/> <input type="radio"/></p> <p>J02 <input type="checkbox"/> <input type="radio"/></p> <p>J03 <input type="checkbox"/> <input type="radio"/></p> <p>J04 <input type="checkbox"/> <input type="radio"/></p>	<p>Jumpers in operating mode selection</p> <p>J01 J02 J03 J04</p>
<p>J01 <input type="checkbox"/> <input type="radio"/></p> <p>J02 <input type="checkbox"/> <input type="radio"/></p> <p>J01 <input type="checkbox"/> <input type="radio"/></p> <p>J02 <input type="checkbox"/></p> <p>J01 <input type="checkbox"/></p> <p>J02 <input type="checkbox"/> <input type="radio"/></p> <p>J01 <input type="checkbox"/></p> <p>J02 <input type="checkbox"/></p>	<p>J01/J02 encoder input filter selection</p> <p>2us encoder input signal filter delay</p> <p>4us encoder input signal filter delay</p> <p>8us encoder input signal filter delay</p> <p>16us encoder input signal filter delay</p>
<p>J03 <input type="checkbox"/> <input type="radio"/></p> <p>J04 <input type="checkbox"/> <input type="radio"/></p> <p>J03 <input type="checkbox"/> <input type="radio"/></p> <p>J04 <input type="checkbox"/></p> <p>J03 <input type="checkbox"/></p> <p>J04 <input type="checkbox"/> <input type="radio"/></p> <p>J03 <input type="checkbox"/></p> <p>J04 <input type="checkbox"/></p>	<p>J03/J04 operating mode selection</p> <p>SI split1 mode</p> <p>SII split2 mode</p> <p>Buffer mode</p> <p>Test mode. The outputs simulate the signals of an encoder at 32 pulses/cycle at a frequency of 31.5KHz</p>

Appendix B –

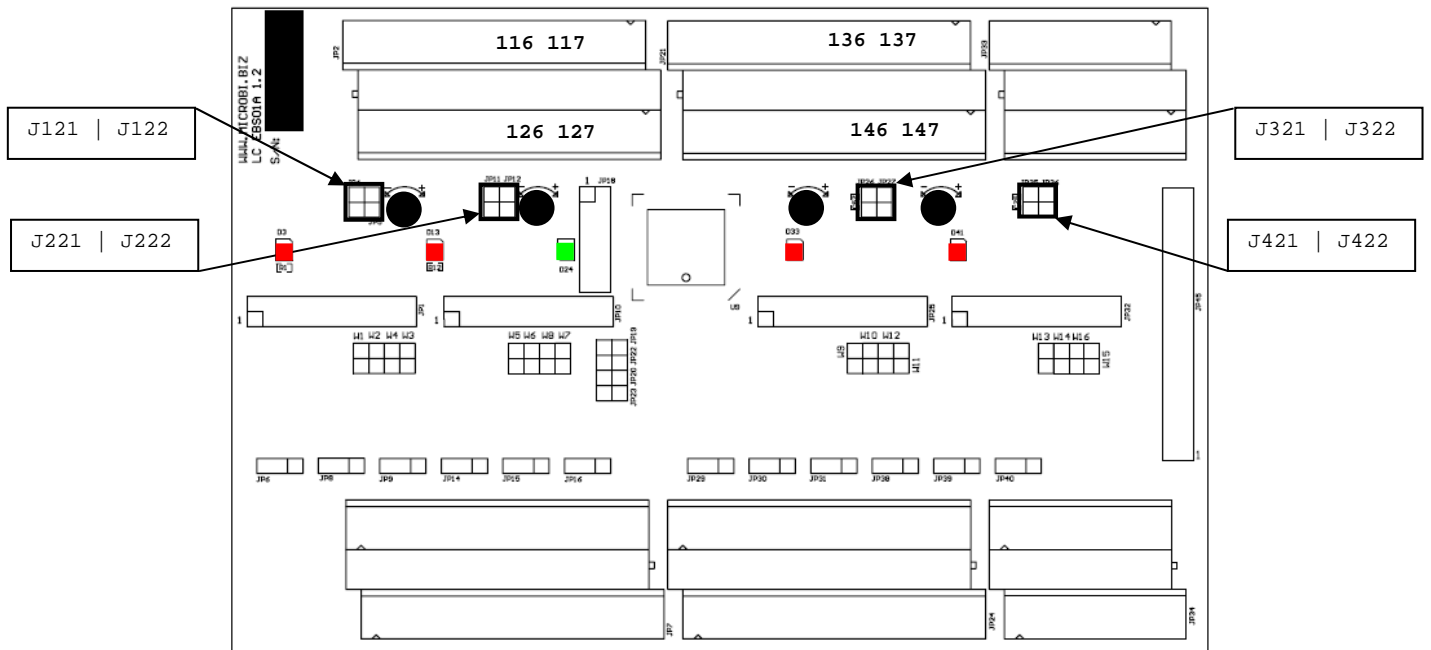
B.1 - EBS01 – Power input





B.2 - EBS01 – Linear regulator

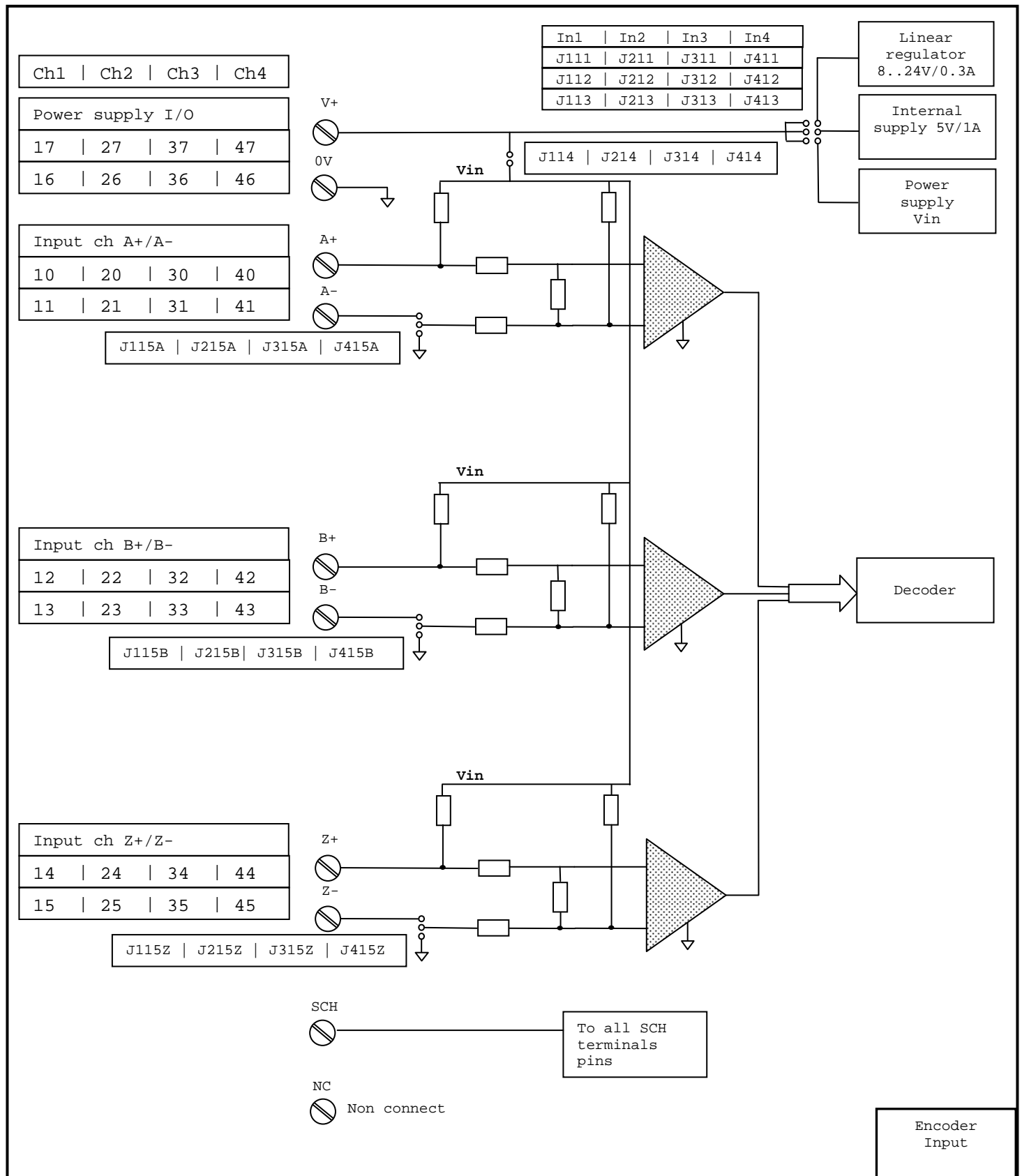


B.3 - Position of jumpers in card power selection

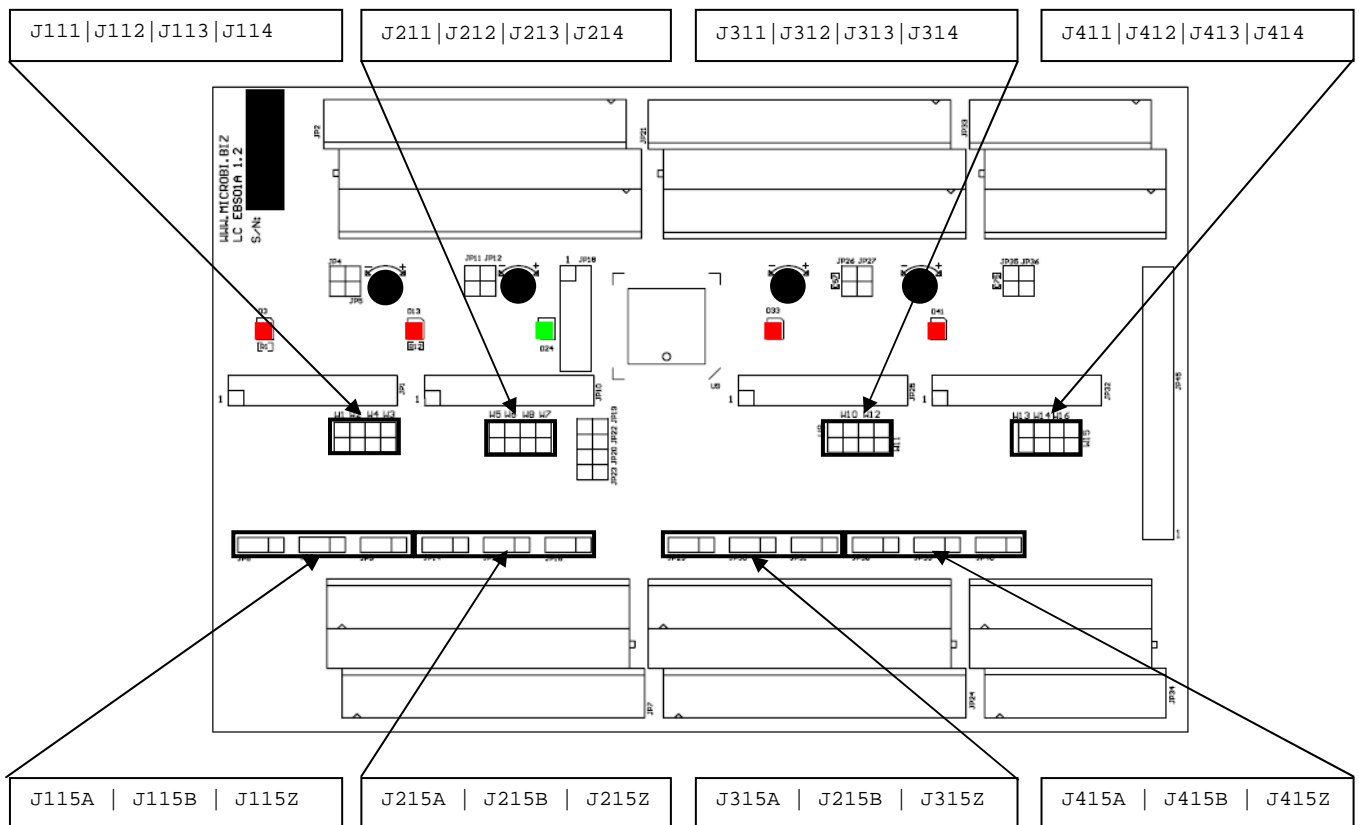


 Vin 0V	Jumpers in card power selection Vin
 Vin 0V	<p>Only one pair must be closed as illustrated in the figure</p> <p>J121/J122 Power input from terminals 116/117 J221/J222 Power input from terminals 126/127 J321/J322 Power input from terminals 136/137 J421/J422 Power input from terminals 146/147</p>

Appendix C - EBS01 – Input Interface

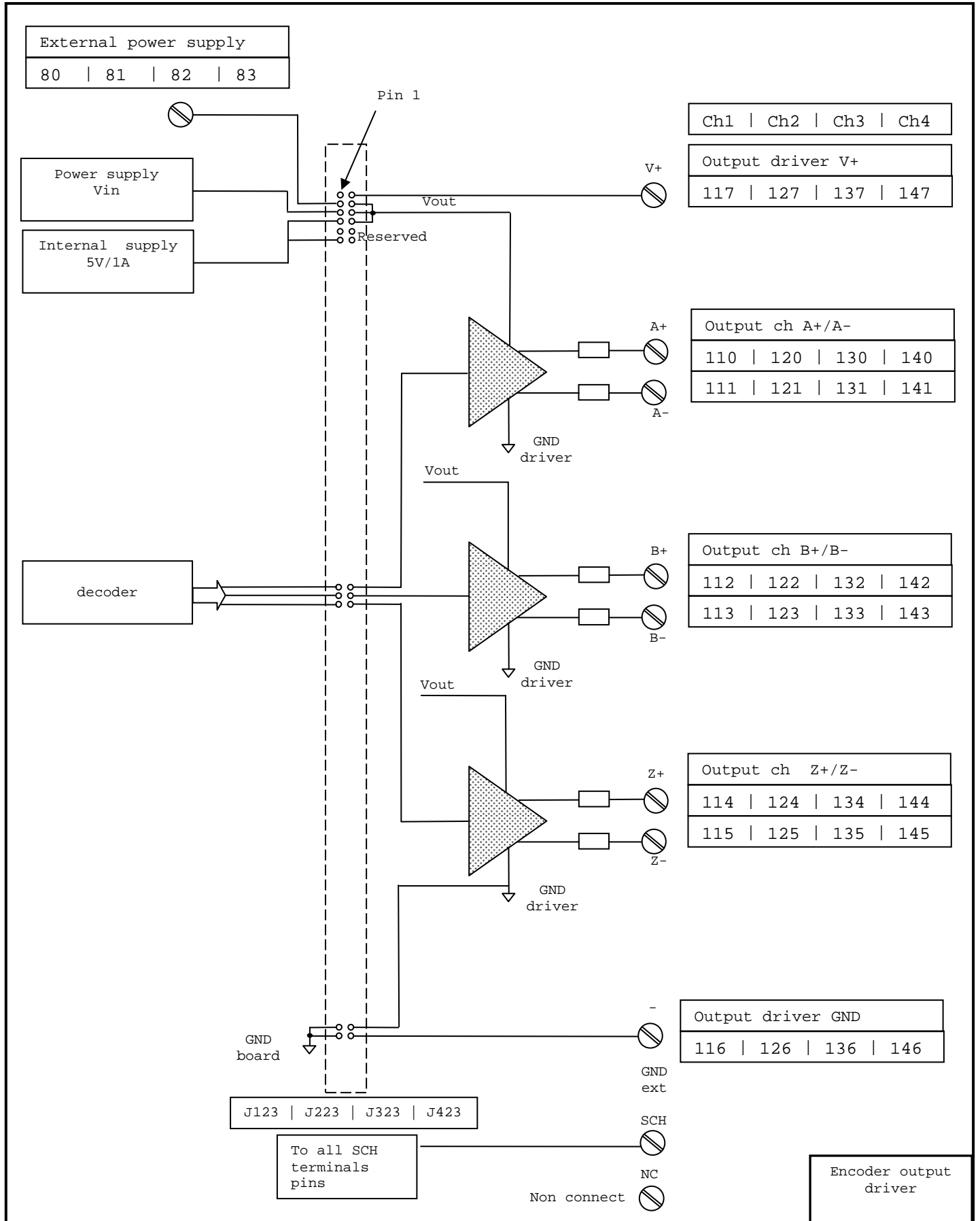


C.1 – Position of input configuration jumpers

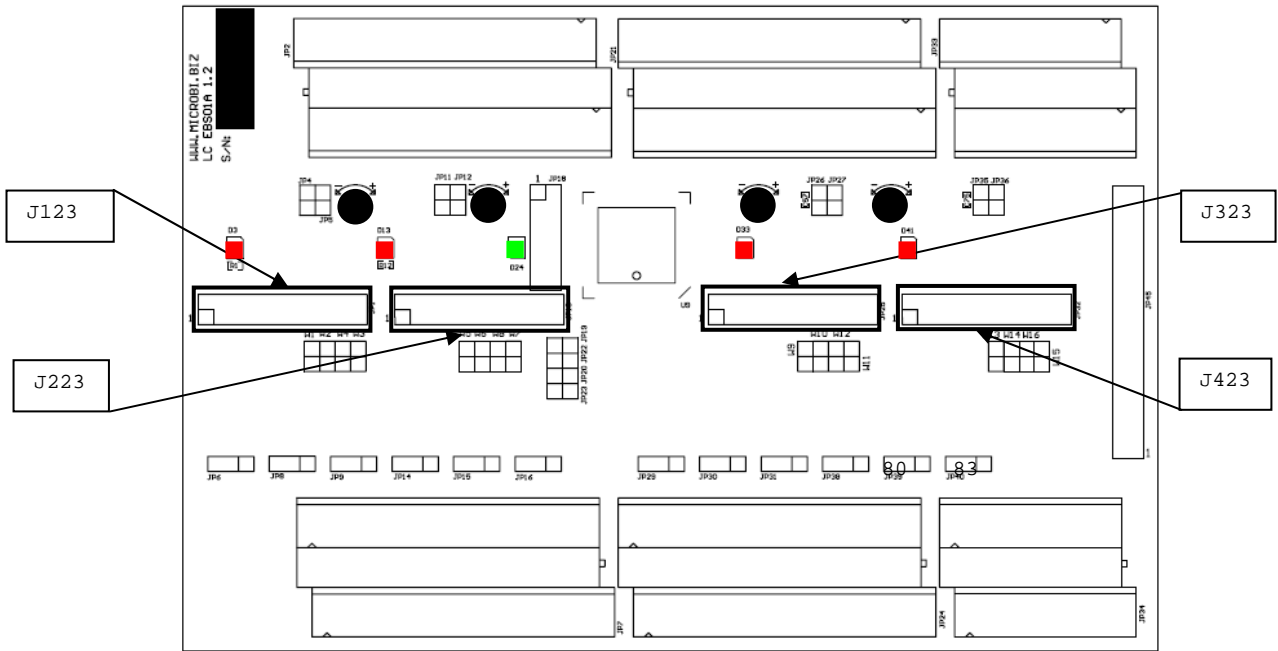


<p>Jx11 Jx12 Jx13 Jx14</p>	<p>Jumpers in encoder power input selection Jx11 Jx12 Jx13 Jx14</p> <p>x = 1,2,3,4</p>
<p>Jx11 Jx12 Jx13 Jx14</p>	<p>Power input from Vreg variable regulator selection</p>
<p>Jx11 Jx12 Jx13 Jx14</p>	<p>5V power input selection</p>
<p>Jx11 Jx12 Jx13 Jx14</p>	<p>Vin card voltage power input selection</p>
<p>Jx11 Jx12 Jx13 Jx14</p>	<p>Enable internal pull-up resistances power with selected voltage</p>
<p>Canale A Canale B Canale Z</p> <p>Jx15A Jx15B Jx15Z</p> <p>x = 1,2,3,4</p>	<p>Push/pull input - differential selection</p>
	<p>Configuration for encoder push/pull input signals</p>
	<p>Configuration for differential encoder input signals</p>

Appendix D - EBS01 – Output Driver

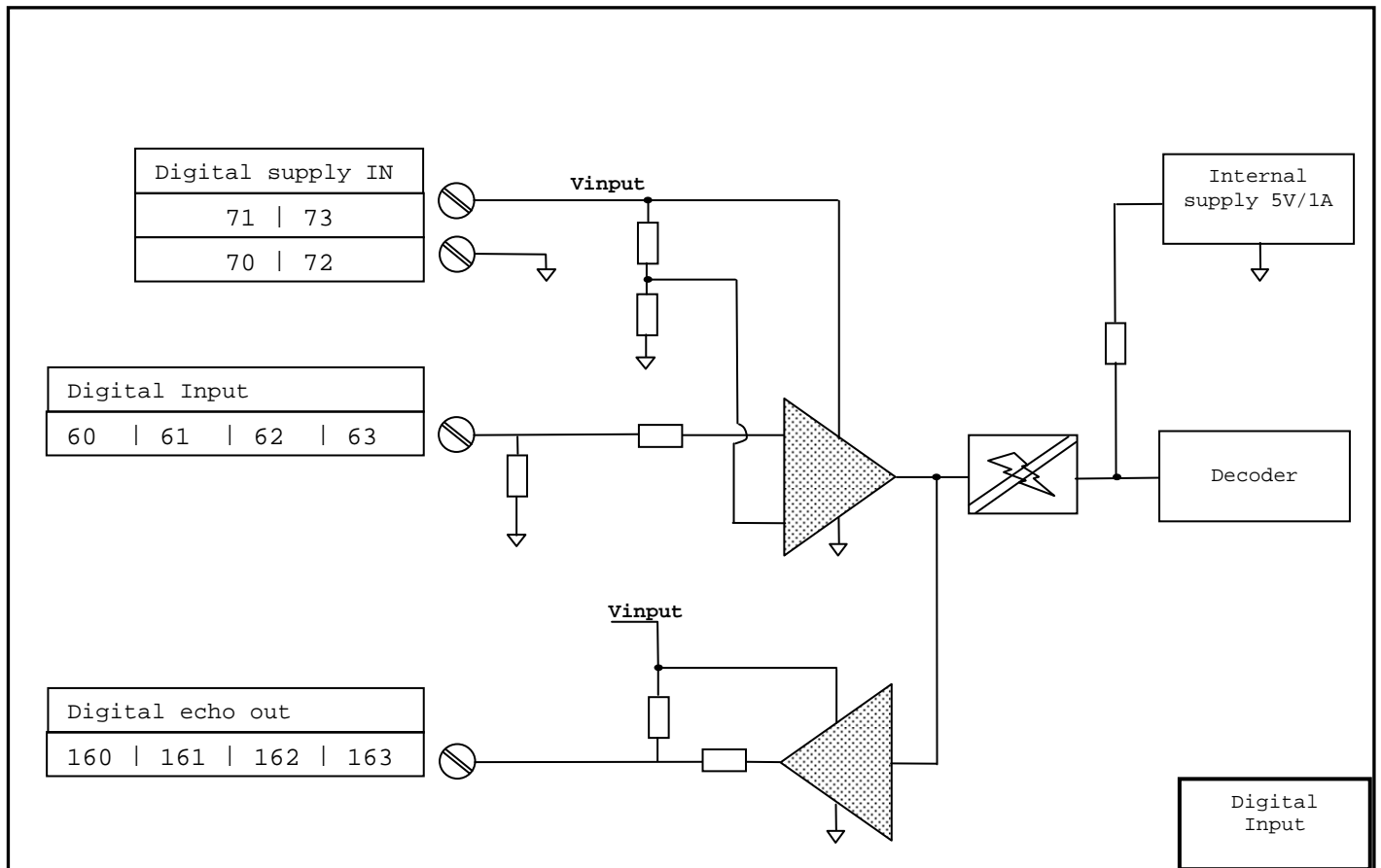


D.1 – Position of jumpers on output configuration (output driver user side)

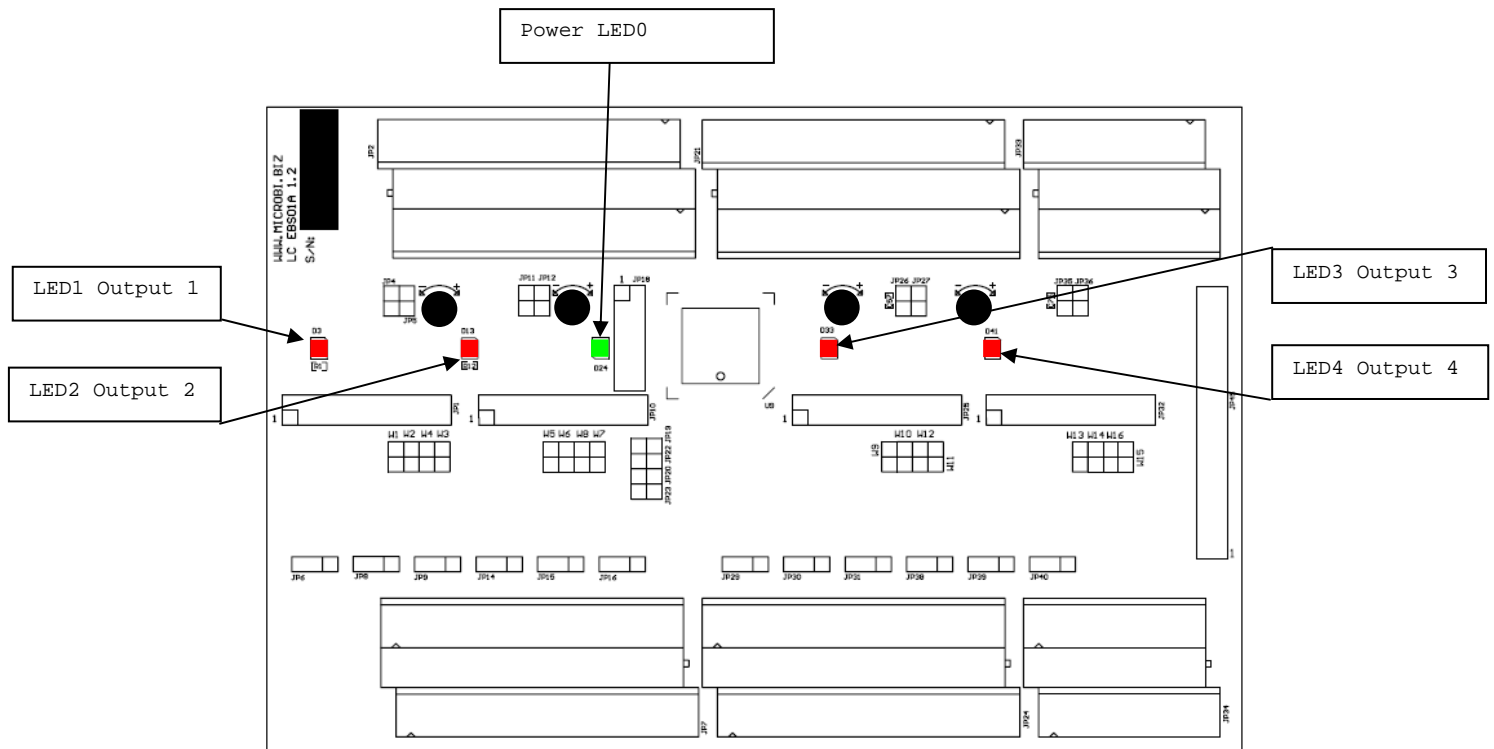



<p>1</p>	<p>Output configuration jumpers</p>
<p>1</p>	<p>Configuration for output power from Vext terminals on AUX power terminal. Use to power the output circuit via linear regulator. (e.g. to use VR2 on the first output, connect terminal 181 with terminal 80). Refer to the power designation diagram at page 8 for the connection.</p>
<p>1</p>	<p>Configuration for output power from Vin card voltage. (Refer to Appendix B card power terminals selection)</p>
<p>1</p>	<p>Configuration for 5V power outputs</p>

Appendix E - EBS01 – Digital inputs for the selection of connected input encoder channels



Appendix F – LEDs and trimmers



■	LED0 – green – lit when the card is powered correctly
■	LED1 – red LED2 – red LED3 – red LED4 – red lit in the case of an output malfunction: short circuit or driver thermal protection
●	Position of hole for setting the variable power trimmer  Increases adjustable power output voltage Decreases adjustable power output voltage

Appendix G - Jumpers on Card EBS01A rev 1.1

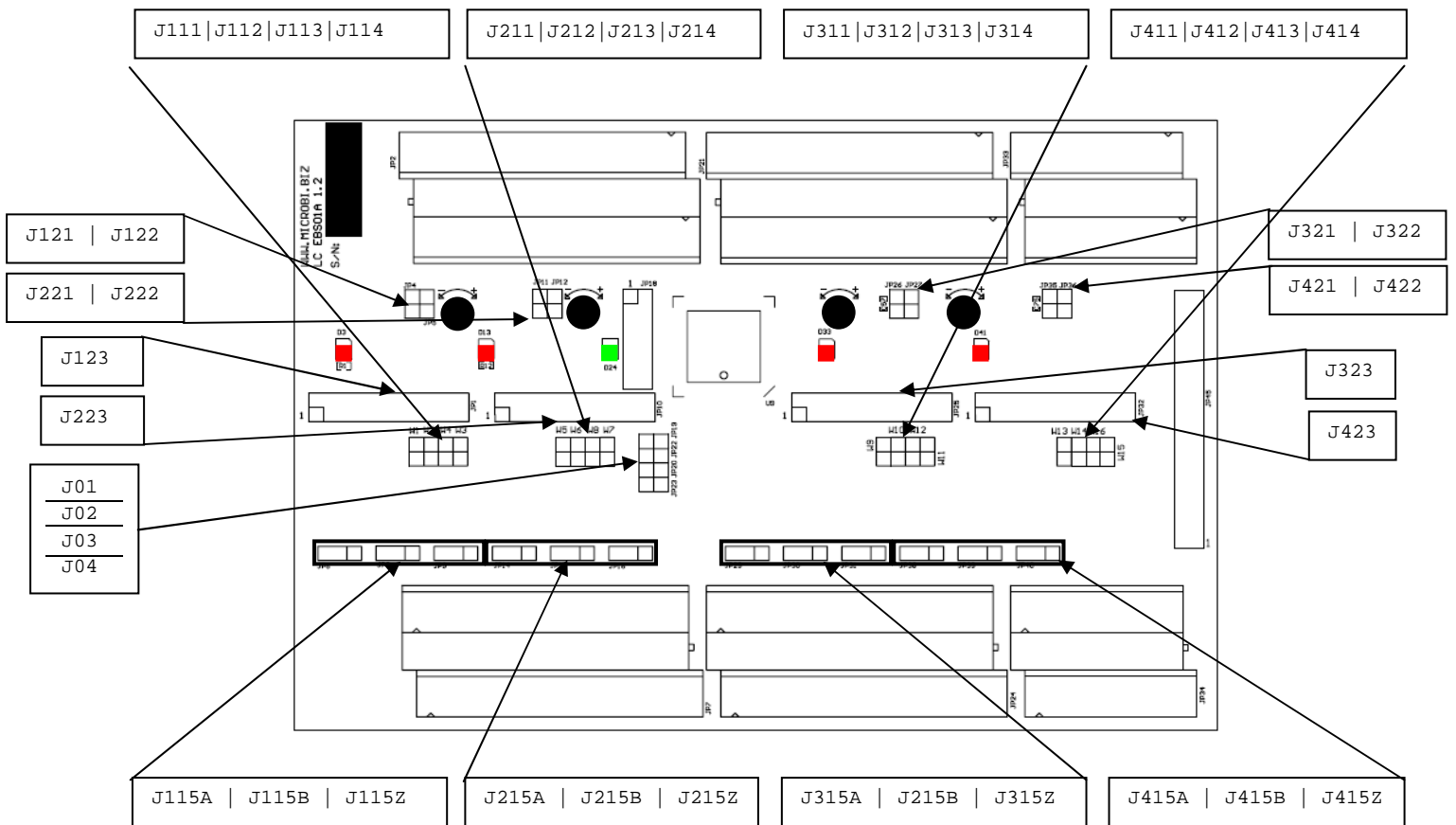


Figure 4 – EBS01A position of configuration jumpers

Appendix H – Adaptor for optoisolating outputs

The adaptor for optoisolating the outputs must be inserted directly onto the Jx23 connector (x= 1,2,3,4) for the output being isolated. The reference mark '1' must coincide with the reference point printed next to the connector on the EBS01A card. The output section for the isolated channel must be powered separately from power terminals 1x6,1x7 (x= 1,2,3,4).

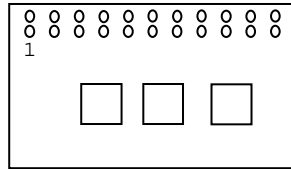


Figure 3 illustrates card EBS01A with the optoisolating adaptors inserted on outputs 1 and 3

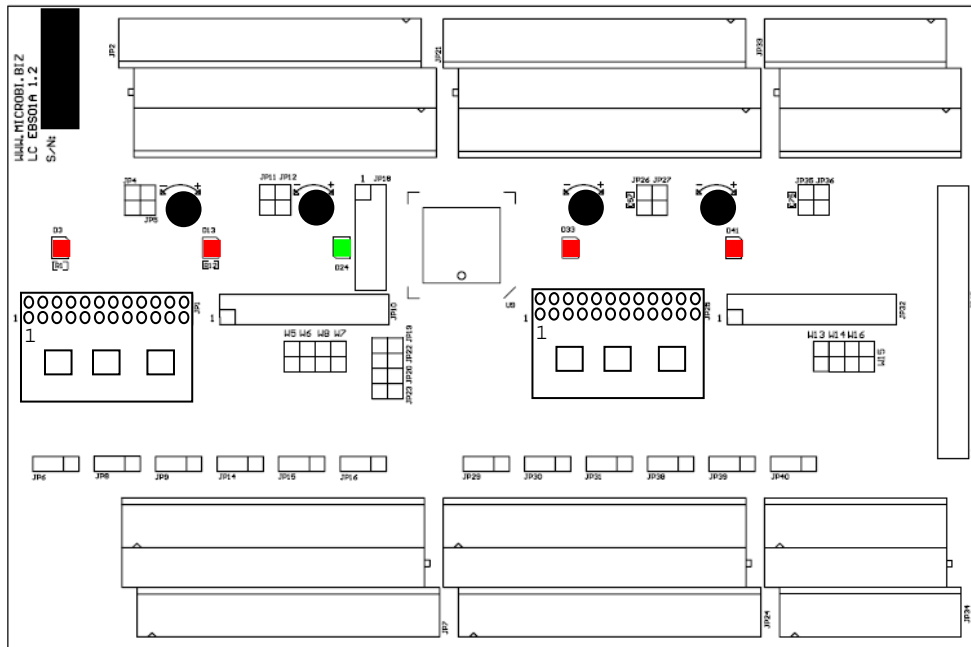


Figure 5 – EBS01A with channels 1 and 3 optoisolated

<p>J01 J02 J03 J04</p> <p>J01 <input type="checkbox"/> <input type="checkbox"/></p> <p>J02 <input type="checkbox"/> <input type="checkbox"/></p> <p>J03 <input type="checkbox"/> <input type="checkbox"/></p> <p>J04 <input type="checkbox"/> <input type="checkbox"/></p>	<p>Operating mode (J01 J02)</p> <p><input type="checkbox"/>SPLIT1 <input type="checkbox"/>SPLIT2 <input type="checkbox"/>BUFFER <input type="checkbox"/>TEST</p> <p>Acquisition filter (J03 J04)</p> <p><input type="checkbox"/>2us <input type="checkbox"/>4us <input type="checkbox"/>8us <input type="checkbox"/>16us</p>
<p>Vin Vin Vin Vin</p> <p>116/117 126/127 136/137 146/147</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>Vin 0V Vin 0V Vin 0V Vin 0V</p>	<p>Card power (Vin)</p> <p><input type="checkbox"/> 116/117 V=_____ <input type="checkbox"/> 126/127 V=_____</p> <p><input type="checkbox"/> 136/137 V=_____ <input type="checkbox"/> 146/147 V=_____</p> <p>Numbering of power terminals</p> <p>Warning:</p> <p>Only one pair must be closed</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>J111 J112 J113 J114 J115A J115B J115Z</p> <p>INPUT no.1</p>	<p>Input power no.1</p> <p><input type="checkbox"/> Vreg1 V=_____ <input type="checkbox"/> 5V <input type="checkbox"/> Vin</p> <p>Input configuration no. 1</p> <p><input type="checkbox"/> Differential <input type="checkbox"/> Push-Pull</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>J211 J212 J213 J214 J215A J215B J215Z</p> <p>INPUT no.2</p>	<p>Input power no. 2</p> <p><input type="checkbox"/> Vreg2 V=_____ <input type="checkbox"/> 5V <input type="checkbox"/> Vin</p> <p>Input configuration no. 2</p> <p><input type="checkbox"/> Differential <input type="checkbox"/> Push-Pull</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>J311 J312 J313 J314 J315A J315B J315Z</p> <p>INPUT no.3</p>	<p>Input power no. 3</p> <p><input type="checkbox"/> Vreg3 V=_____ <input type="checkbox"/> 5V <input type="checkbox"/> Vin</p> <p>Input configuration no. 3</p> <p><input type="checkbox"/> Differential <input type="checkbox"/> Push-Pull</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>J411 J412 J413 J414 J415A J415B J415Z</p> <p>INPUT no.4</p>	<p>Input power no. 4</p> <p><input type="checkbox"/> Vreg4 V=_____ <input type="checkbox"/> 5V <input type="checkbox"/> Vin</p> <p>Input configuration no. 4</p> <p><input type="checkbox"/> Differential <input type="checkbox"/> Push-Pull</p>
<p>J123</p> <p>1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>Vext Vin 5V ChA ChB ChZ GND GND</p> <p>OUTPUT no.1</p>	<p>Output power no.1</p> <p><input type="checkbox"/> Vin <input type="checkbox"/> 5V <input type="checkbox"/> Vreg n°___ V=_____</p> <p><input type="checkbox"/> Vext V=_____</p> <p><input type="checkbox"/> Optoisolated</p> <p>Connect terminals:</p> <p><input type="checkbox"/> 80 <input type="checkbox"/> 180</p> <p><input type="checkbox"/> 81 <input type="checkbox"/> 181</p> <p><input type="checkbox"/> 82 <input type="checkbox"/> 182</p> <p><input type="checkbox"/> 84 <input type="checkbox"/> 183</p>
<p>J223</p> <p>1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>Vext Vin 5V ChA ChB ChZ GND GND</p> <p>OUTPUT no.2</p>	<p>Output power no. 2</p> <p><input type="checkbox"/> Vin <input type="checkbox"/> 5V <input type="checkbox"/> Vreg n°___ V=_____</p> <p><input type="checkbox"/> Vext V=_____</p> <p><input type="checkbox"/> Optoisolated</p> <p>Connect terminals:</p> <p><input type="checkbox"/> 80 <input type="checkbox"/> 180</p> <p><input type="checkbox"/> 81 <input type="checkbox"/> 181</p> <p><input type="checkbox"/> 82 <input type="checkbox"/> 182</p> <p><input type="checkbox"/> 84 <input type="checkbox"/> 183</p>
<p>J323</p> <p>1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>Vext Vin 5V ChA ChB ChZ GND GND</p> <p>OUTPUT no.3</p>	<p>Output power no. 3</p> <p><input type="checkbox"/> Vin <input type="checkbox"/> 5V <input type="checkbox"/> Vreg n°___ V=_____</p> <p><input type="checkbox"/> Vext V=_____</p> <p><input type="checkbox"/> Optoisolated</p> <p>Connect terminals:</p> <p><input type="checkbox"/> 80 <input type="checkbox"/> 180</p> <p><input type="checkbox"/> 81 <input type="checkbox"/> 181</p> <p><input type="checkbox"/> 82 <input type="checkbox"/> 182</p> <p><input type="checkbox"/> 84 <input type="checkbox"/> 183</p>
<p>J423</p> <p>1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>Vext Vin 5V ChA ChB ChZ GND GND</p> <p>OUTPUT no.4</p>	<p>Output power no. 4</p> <p><input type="checkbox"/> Vin <input type="checkbox"/> 5V <input type="checkbox"/> Vreg n°___ V=_____</p> <p><input type="checkbox"/> Vext V=_____</p> <p><input type="checkbox"/> Optoisolated</p> <p>Connect terminals:</p> <p><input type="checkbox"/> 80 <input type="checkbox"/> 180</p> <p><input type="checkbox"/> 81 <input type="checkbox"/> 181</p> <p><input type="checkbox"/> 82 <input type="checkbox"/> 182</p> <p><input type="checkbox"/> 84 <input type="checkbox"/> 183</p>