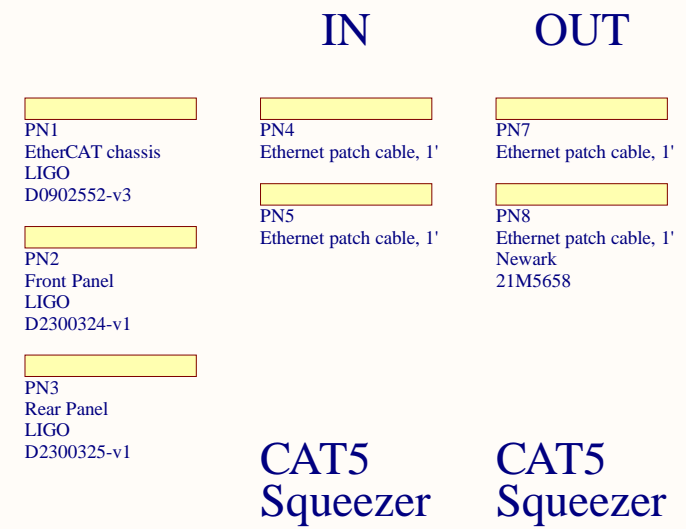


### Ports

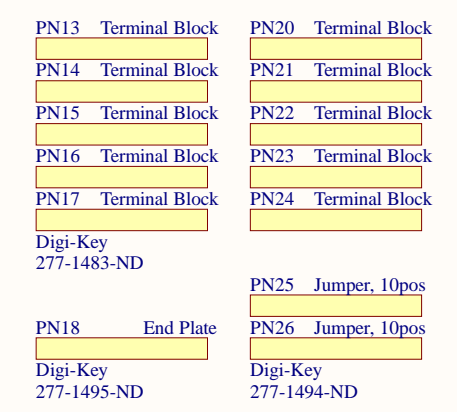


Mount the terminal block on spare DIN rail space.  
 Use the terminal block to distribute the 24V supply.

This EtherCAT chassis uses copper only.  
 Mount the modular adapters to the front panel.  
 Using CAT5 patch cables:

- Connect the front panel input to the first coupler (left rail).
- Connect the output of the first coupler to the input of the second one.
- Connect the output of the second coupler to the input of the third one.
- Connect the front panel output to the output of the last coupler (right rail).

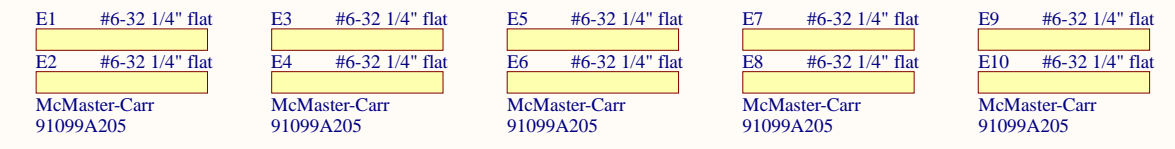
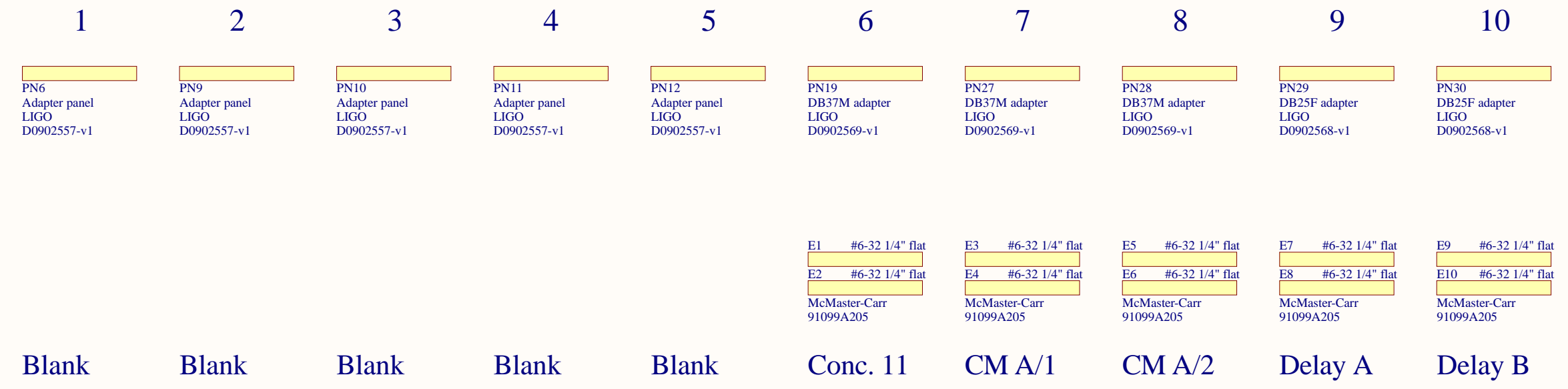
### TBLOCK



Alternative terminal block:  
 - Phoenix 2315272  
 - Phoenix 2315269

Alternative DC-DC supply:  
 - Mean Well DDR-15G-5

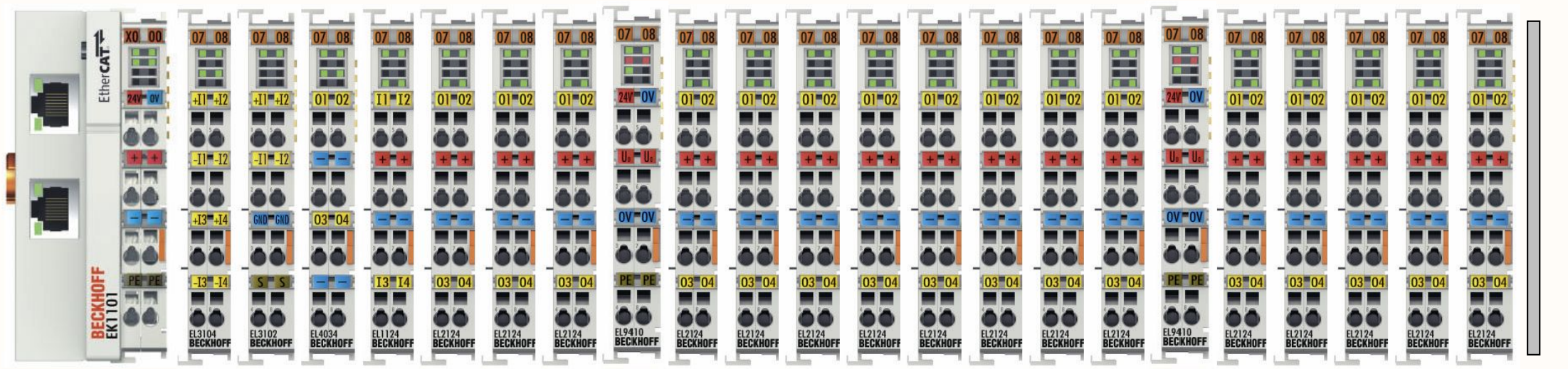
### Slots



Title			<b>EtherCAT Squeezer 5</b>		
Size	Number	Revision		1	
B	D2300323				
Date:	10/04/2023	Sheet 1 of 4			
File:	C:\Users\...\EtherCATSqueezerE1.SchDoc	Drawn By: Daniel Sigg			



- B2 EK1101 EtherCAT coupler w/ ID switch
- B3 EL3104 4-channel analog input terminals, differential, 16 bits
- B4 EL3102 2-channel analog input terminals, differential, 16 bits
- B5 EL4134 4-channel analog output terminals, differential, 16 bits
- B6 EL1124 4-channel digital input terminals, 5V
- B7 EL2124 4-channel digital output terminals, 5V
- B8 EL2124 4-channel digital output terminals, 5V
- B9 EL2124 4-channel digital output terminals, 5V
- B10 EL9410 Power supply terminals for E-bus, diagnostics
- B11 EL2124 4-channel digital output terminals, 5V
- B12 EL2124 4-channel digital output terminals, 5V
- B13 EL2124 4-channel digital output terminals, 5V
- B14 EL2124 4-channel digital output terminals, 5V
- B15 EL2124 4-channel digital output terminals, 5V
- B16 EL2124 4-channel digital output terminals, 5V
- B17 EL2124 4-channel digital output terminals, 5V
- B18 EL2124 4-channel digital output terminals, 5V
- B19 EL9410 Power supply terminals for E-bus, diagnostics
- B20 EL2124 4-channel digital output terminals, 5V
- B21 EL2124 4-channel digital output terminals, 5V
- B22 EL2124 4-channel digital output terminals, 5V
- B23 EL2124 4-channel digital output terminals, 5V
- B24 EL2124 4-channel digital output terminals, 5V
- B25 EL9011 End cap



0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

Ebus 24V  
 Power contacts 5V (DC1) 24V 5V (DC1) — 5V (DC2)  
 DC\_1 Common mode servo A Delay line phase shifter A/B DC\_2

Power budget:  
 EL3104: 0.130 A (1x)  
 EL3102: 0.170 A (1x)  
 EL4234: 0.265 A (1x)  
 EL1124: 0.090 A (1x)  
 EL2124: 0.130 A (3x)  
 -----  
 1.085 A

Power budget:  
 EL2124: 0.130 A (8x)  
 -----  
 1.040 A

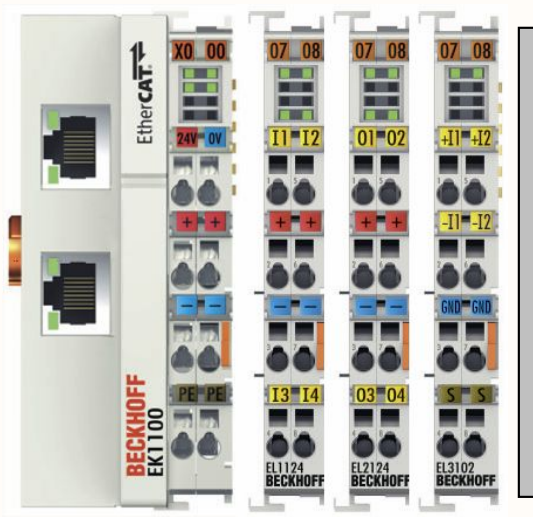
Power budget:  
 EL2124: 0.130 A (5x)  
 -----  
 0.650 A

Title <b>EtherCAT Squeezer 5: Left Rail</b>		
Size B	Number <b>D2300323</b>	Revision <b>1</b>
Date: 10/04/2023	Sheet 2 of 4	
File: C:\Users\...\EtherCATSqueezerE2.SchDoc	Drawn By: Daniel Sigg	

B27  
5V/0.6A isolated DC-DC converter, Omron S82S-7305



B28  
EK1100  
Beckhoff EtherCAT coupler



B29  
EL1124  
4-channel digital input terminals, 5V



B30  
EL2124  
4-channel digital output terminals, 5V



B31  
EL3102  
2-channel analog input terminals, differential, 16 bits



B32  
EL9011  
End cap

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

Ebus 24V  
Power contacts 5V

DC\_3 Concentrator 11

Power budget:  
 EL3102: 0.170 A (1x)  
 EL1124: 0.090 A (1x)  
 EL2124: 0.130 A (1x)  
 -----  
 0.390 A

Title			<b>EtherCAT Squeezer 5: Middle Rail</b>		
Size	Number	Revision		1	
B	<b>D2300323</b>				
Date:	10/04/2023	Sheet 3 of 4			
File:	C:\Users\...\EtherCATSqueezerE3.SchDoc	Drawn By: Daniel Sigg			

1

2

3

4

5

6

A

A

B

B

C

C

D

D

Title		<b>EtherCAT Squeezer 5: Right Rail</b>	
Size	Number	Revision	
B	<b>D2300323</b>	<b>1</b>	
Date:	10/04/2023	Sheet 4 of	4
File:	C:\Users\...\EtherCATSqueezerE4.SchDoc	Drawn By:	Daniel Sigg

1

2

3

4

5

6

Bill of Materials

LIGO Project

<Parameter DCC not found> Revision 1

Project: EtherCATSqueezere.PrjPCB  
 Author: Daniel Sigg

Number of boards	2
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Report Date: 10/4/2023 4:04 PM  
 Print Date: 04-Oct-23 4:04:17 PM

Quantity	Distributor	Part Number	Comment	Description	Designator	Footprint	Assem bl Type	Extra	Exces	Ad	Quantity to Or
3	Newark	27C5226	5V/0.6A isolated DC-DC converter, Omron S82S-7305	5V/0.6A isolated DC-DC converter, Omron S82S-7305	B1, B26, B27		M	5	0%	5	11
1	Beckhoff	EK1101	EtherCAT coupler w/ ID switch	Beckhoff EtherCAT coupler w/ ID switch	B2		M	5	0%	5	7
1	Beckhoff	EL3104	4-channel analog input terminals, differential, 16 bits	4-channel analog input terminals, differential, 16 bits	B3		M	5	0%	5	7
2	Beckhoff	EL3102	2-channel analog input terminals, differential, 16 bits	2-channel analog input terminals, differential, 16 bits	B4, B31		M	5	0%	5	9
1	Beckhoff	EL4134	4-channel analog output terminals, differential, 16 bits	4-channel analog output terminals, differential, 16 bits	B5		M	5	0%	5	7
2	Beckhoff	EL1124	4-channel digital input terminals, 5V	4-channel digital input terminals, 5V	B6, B29		M	5	0%	5	9
17	Beckhoff	EL2124	4-channel digital output terminals, 5V	4-channel digital output terminals, 5V	B7, B8, B9, B11, B12, B13, B14, B15, B16, B17, B18, B20, B21, B22, B23, B24, B30		M	5	0%	5	39
2	Beckhoff	EL9410	Power supply terminals for E-bus, diagnostics	Power supply terminals for E-bus, diagnostics	B10, B19		M	5	0%	5	9
2	Beckhoff	EL9011	End cap	End cap	B25, B32		M	5	0%	5	9
1	Beckhoff	EK1100	Beckhoff EtherCAT coupler	Beckhoff EtherCAT coupler	B28		M	5	0%	5	7
10	McMaster-Carr	91099A205	#6-32 1/4" flat	#6-32 1/4" flat head screw	E1, E2, E3, E4, E5, E6, E7, E8, E9, E10		M	5	0%	5	25
1	LIGO	D0902552-v3	EtherCAT chassis	Additional part number	PN1		M	5	0%	5	7
1	LIGO	D2300324-v1	Front Panel	Additional part number	PN2		M	5	0%	5	7
1	LIGO	D2300325-v1	Rear Panel	Additional part number	PN3		M	5	0%	5	7
4	Newark	21M5658	Ethernet patch cable, 1'	Additional part number	PN4, PN5, PN7, PN8		M	5	0%	5	13
5	LIGO	D0902557-v1	Adapter panel	Blank	PN6, PN9, PN10, PN11, PN12, PN13, PN14, PN15, PN16, PN17, PN20, PN21, PN22, PN23, PN24		M	5	0%	5	15
10	Digi-Key	277-1483-ND	Terminal Block	Terminal Block	PN18		M	5	0%	5	25
1	Digi-Key	277-1495-ND	End Plate	End Plate	PN18		M	5	0%	5	7
3	LIGO	D0902569-v1	DB37M adapter	Additional part number	PN19, PN27, PN28		M	5	0%	5	11
2	Digi-Key	277-1494-ND	Jumper, 10pos	Jumper, 10pos	PN25, PN26		M	5	0%	5	9
2	LIGO	D0902568-v1	DB25F adapter	Additional part number	PN29, PN30		M	5	0%	5	9
72	Total pieces										

Summary per Board	
Total # of unique parts	21
SMT Placements per board	0
Thru-Hole placement per board	0
Fine pitch placement per board	0
BGA placement per board	0
Mechanical placement per board	72