

GALIL_DMC4040_DIRECT
EXTENDED IO

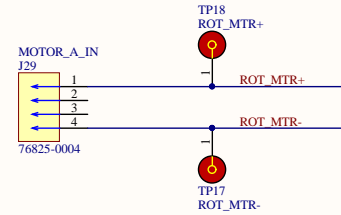
CMB-41012 EXTENDED IO	
IO18	1 IO18 TCBL_INNRDM_PWR
IO21	2 IO21 TCBL_ROT_SIG
IO24	3 IO24 SCBL_ROT_MTR
IO26	4 IO26 SCBL_ROT_SIG
IO29	5 IO29 ODRM_SPARE_SW1
IO32	6 IO32 DETENT1_SW
IO33	7 IO33 PDL_NO_ESTOP
IO36	8 IO36 PDL_PB2
IO38	9 IO38 PDL_PB3
NC	10
IO41	11 IO41 PADDLE_LED1
IO44	12 IO44 PADDLE_LED4
IO47	13 IO47 DMC_HEARTBEAT
NC	14
N/C	14
RSRV / +5V	16 IO17 TCBL_INNRDM_SIG
IO17	17 IO20 TCBL_ROT_ENC
IO23	18 IO23 SCBL_INNRDM_PWR
IO25	19 IO25 SCBL_ROT_ENC
IO28	20
IO31	21 IO31_DETENT2_SW
NC	22
N/C	23 IO35_PDL_PB5
IO35	24 IO37_PDL_PB1
IO37	25
NC	26 IO40_PDL_PB0
IO43	27 IO_43_PADDLE_LED3
IO46	28 IO46_AMUX_A1
IO48	30
+3.3V / RSRV	31 IO19_TCBL_ROT_MTR
IO19	32 IO22_SCBL_INNRDM_SIG
IO22	33 DGND
DGND	34 IO27_SCBL_PADDLE
IO27	35 IO30_ODRM_SPARE_SW2
IO30	36 DGND
DGND	37 IO34_PDL_PB6
IO34	38
NC	39 DGND
DGND	40 IO39_PDL_PB4
IO39	41 IO42_PADDLE_LED2
IO42	42 IO45_AMUX_A0
IO45	43 DGND
DGND	44
N/C	

CMB41022 EXTENDED IO

GALIL_DMC4040_DIRECT
IO

ICM-42000 I/O	
ERR	1
DI1	2 DI1_INDEX1
DI4	3 DI4_CART_PIN_SW
DI7	4 DI7_AIR_SPLY_RETRACT_SW
ELO	5 ROTATION_DISABLE
LSCOM	6 DGND
HOMA	7
HOMB	8
HOMC	9 C_HOME
HOMD	10 D_HOME
OPWR	11 +24VDC
DO3	12 24V_ROT_48V_EN
DO6	13 24V_ROT_DETENT
DO14	14 DGND
ORET	15
+5V	16
RST	17 DGND
INCOM	18 DI3_DRUM_PIN_SW
DI19	19 DI6_ROT_DETENT_CLEAR_SW
DI20	20 ROTATION_DISABLE
ABRT	21
NC	22
RLSA	23
RLSB	24 C_RLS
RLSC	25 D_RLS
RLSD	26
NC	26
DO2	27 24V_INNRDM_48V_EN
DO5	28 24V_AIR_SPLY_RETR
DO8	29 24V_SPARE_RELAY2
DO30	30
+5V	31
DGND	32
DI2	33 DI2_INDEX2
DI3	34 DI5_ROT_DETENT_ENGAGE_SW
DI5	35 NO_E_STOP
DI8	36
DGND	37
FLSA	38
FLSB	39 C_FLS
FLSC	40 D_FLS
FLSD	41
DGND	42
DO1	43 24V_INNRDM_24V_EN
DO4	44 24V_RELAY_LATCH
DO7	45 24V_AIR_SPLY_ENGAGE
DO15	46
CMP	47
DGND	48

ICM42000 I/O



GALIL_DMC4040_DIRECT
ANALOG

ICM-42000 ANALOG	
AGND	1 AGND
AI1	2 CLAMP_STATUS_V
AI3	3 PWR_VOLTAGE_MUX
AI5	4 TEMP_MUX1
AI7	5 AI_SPARE5
AGND	6 AGND
-12V	7 -12V_ANA
+5V	8 +5V_ANA
AGND	9 AGND
AI2	10 AIR_SUPPLY_PRESSURE
AI4	11 HUMIDITY_TEMP_MUX
AI6	12 TEMP_MUX2
AI8	13 AI_SPARE6
NC	14
+12V	15 +12V_ANA

ICM42000 ANALOG

GALIL_DMC4040_DIRECT
ENCODER_A

ICM-42000 ENCODER	
MI+	1 ROT_MTR_ENC_I+
MB+	2 ROT_MTR_ENC_B+
MA+	3 ROT_MTR_ENC_A+
AB+	4
DGND	5 ROT_MTR_ENC_RTN
MI-	6 ROT_MTR_ENC_I-
MB-	7 ROT_MTR_ENC_B-
MA-	8 ROT_MTR_ENC_A-
AA-	9
HALA	10
AA+	11
AB-	12
HALB	13
HALC	14
+5V	15 ROT_MTR_ENC_5VDC

ICM42000 Encoder

GALIL_DMC4040_DIRECT
ENCODER_B

ICM-42000 ENCODER	
MI+	1 ROT_DRM_ENC_I+
MB+	2 ROT_DRM_ENC_B+
MA+	3 ROT_DRM_ENC_A+
AB+	4
DGND	5 ROT_DRM_ENC_RTN
MI-	6 ROT_DRM_ENC_I-
MB-	7 ROT_DRM_ENC_B-
MA-	8 ROT_DRM_ENC_A-
AA-	9
HALA	10
AA+	11
AB-	12
HALB	13
HALC	14
+5V	15 ROT_DRM_ENC_5VDC

ICM42000 Encoder

GALIL_DMC4040_DIRECT
ENCODER_C

ICM-42000 ENCODER		ENCODER_C_HDR J9	
MI+	1 C_ENC_MI+	1	
MB+	2 C_ENC_MB+	2	
MA+	3 C_ENC_MA+	3	
AB+	4 C_HOME	4	
DGND	5 C_ENC_RTN	5	
MI-	6 C_ENC_MI-	6	
MB-	7 C_ENC_MB-	7	
MA-	8 C_ENC_MA-	8	
AA-	9 C_FLS	9	
HALA	10 C_HALA	10	
AA+	11 C_RLS	11	
AB-	12 +24VDC	12	
HALB	13 C_HALB	13	
HALC	14 C_HALC	14	
HALC	15 C_ENC_5VDC	15	
+5V	+24VDC_RTN	16	

ICM42000 Encoder

GALIL_DMC4040_DIRECT
ENCODER_D

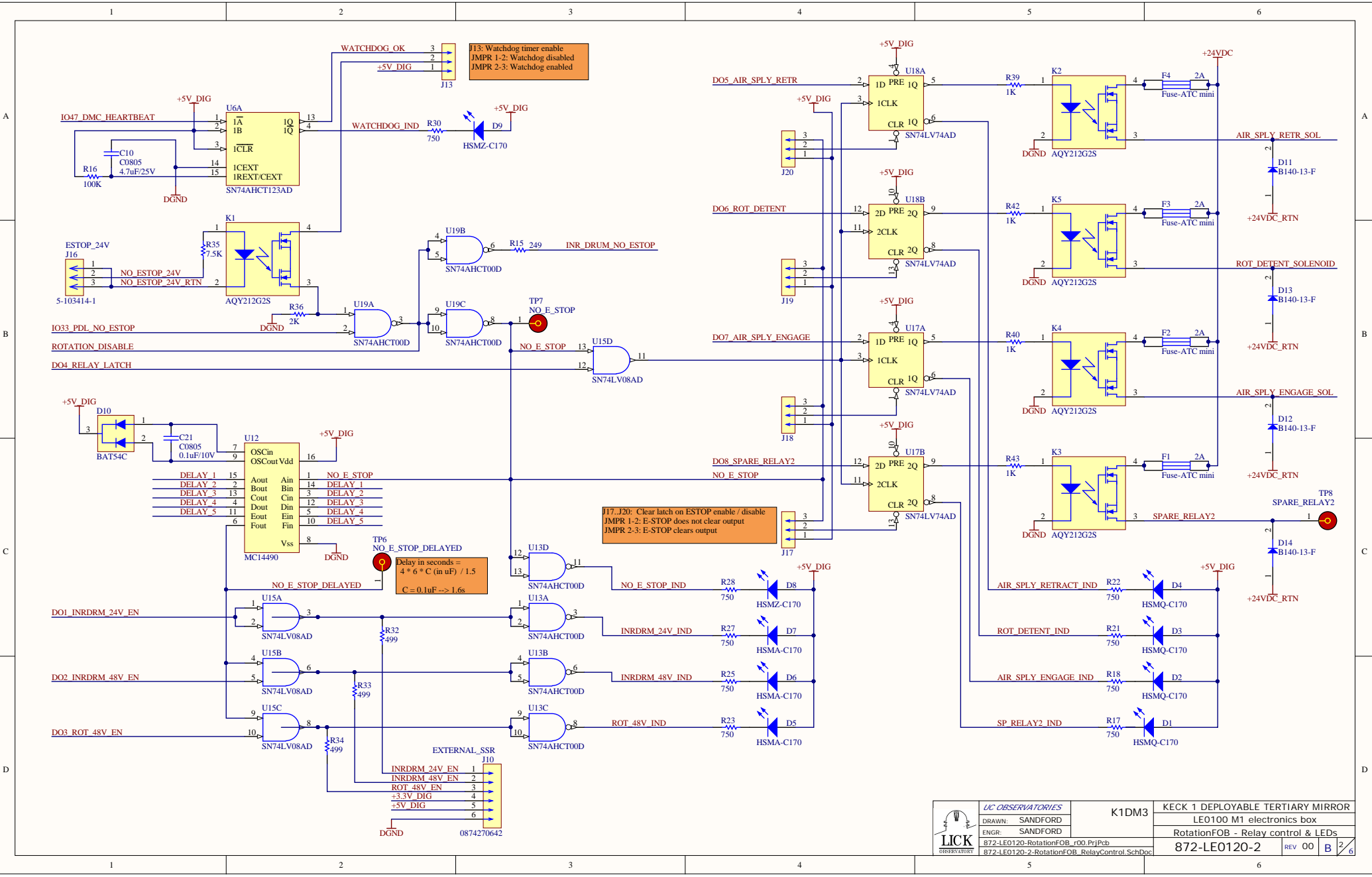
ICM-42000 ENCODER		ENCODER_D_HDR J8	
MI+	1 D_ENC_MI+	1	
MB+	2 D_ENC_MB+	2	
MA+	3 D_ENC_MA+	3	
AB+	4 D_HOME	4	
DGND	5 D_ENC_RTN	5	
MI-	6 D_ENC_MI-	6	
MB-	7 D_ENC_MB-	7	
MA-	8 D_ENC_MA-	8	
AA-	9 D_FLS	9	
HALA	10 D_HALA	10	
AA+	11 D_RLS	11	
AB-	12 +24VDC	12	
HALB	13 D_HALB	13	
HALC	14 D_HALC	14	
HALC	15 D_ENC_5VDC	15	
+5V	+24VDC_RTN	16	

ICM42000 Encoder



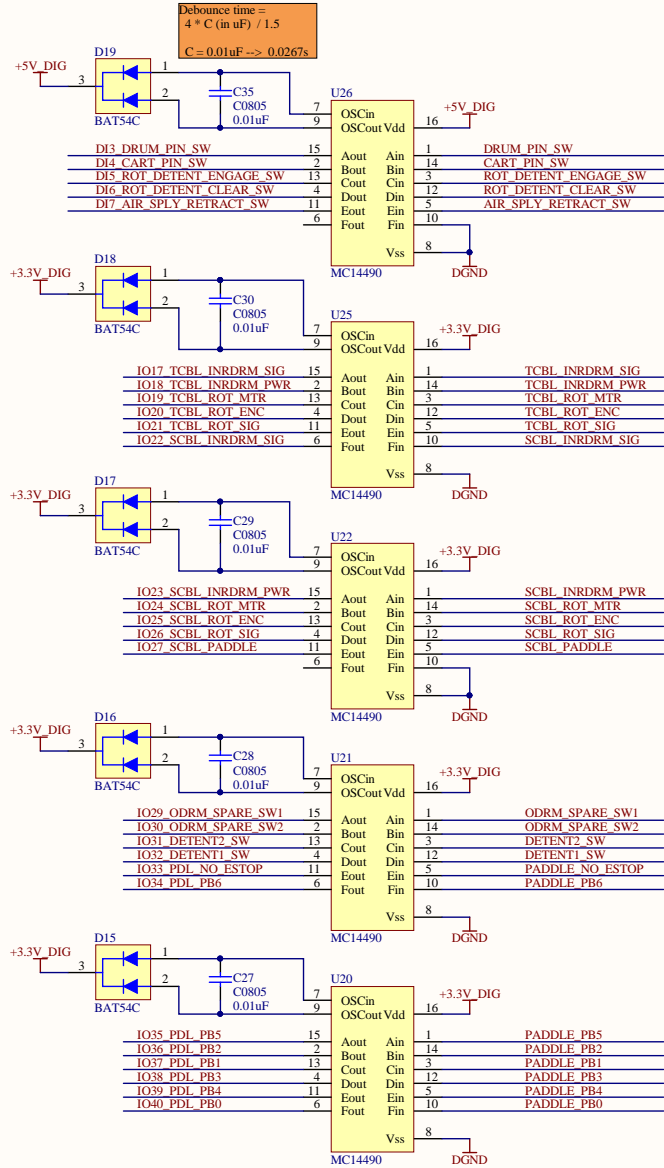
UC OBSERVATORIES
DRAWN: SANDFORD
ENGR: SANDFORD
872-LE0120-RotationFOB_r00.PjtPcb
872-LE0120-1-RotationFOB_GallConn_SchDoc

K1DM3
KECK 1 DEPLOYABLE TERTIARY MIRROR
LE0100 M1 electronics box
RotationFOB - Gall connections
872-LE0120-1 REV 00 B 1/6

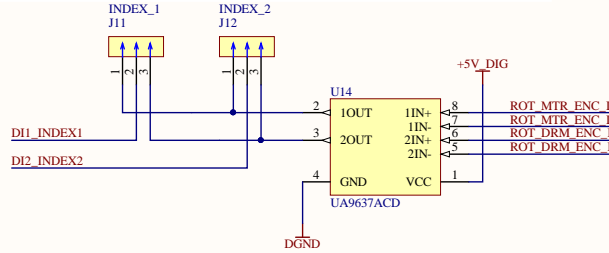


	UC OBSERVATORIES	K1DM3 KECK 1 DEPLOYABLE TERTIARY MIRROR LE0100 M1 electronics box RotationFOB - Relay control & LEDs 872-LE0120-2 REV 00 B 2/6
	DRAWN: SANDFORD	
	ENGR: SANDFORD	
	872-LE0120-RotationFOB_r00.PrjPcb 872-LE0120-2-RotationFOB_RelayControl_SchDoc	

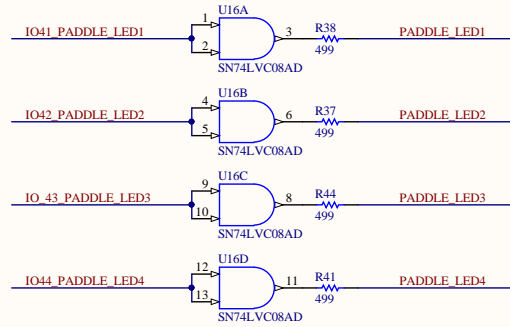
**GALIL INPUT SIGNAL CONDITIONING:
DEBOUNCE AND STATIC PROTECTION**



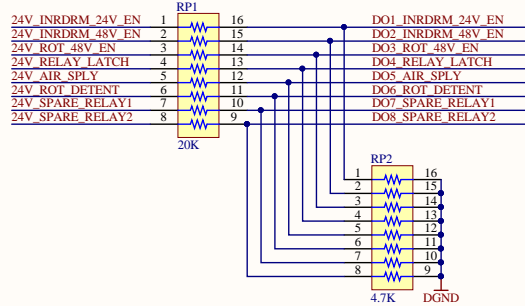
**GALIL INDEX INPUT SIGNAL CONDITIONING:
CONVERT FROM DIFFERENTIAL TO SINGLE ENDED
JUMPERS TO SELECT WHICH ENCODER PROVIDES PRIMARY INDEX**



**GALIL OUTPUT SIGNAL CONDITIONING:
LED DRIVERS FOR HAND PADDLE**



**GALIL OUTPUT SIGNAL CONDITIONING:
REDUCE 24V OUTPUTS FOR USE WITH 5V LOGIC**



UC OBSERVATORIES
 DRAWN: SANDFORD
 ENGR: SANDFORD
 872-LE0120-RotationFOB_r00.PjtPcb
 872-LE0120-3-RotationFOB_SignalCond_SchDoc

K1DM3 KECK 1 DEPLOYABLE TERTIARY MIRROR
 LE0100 M1 electronics box
 RotationFOB - Signal conditioning
 872-LE0120-3 REV 00 B 3/6

ANALOG MULTIPLEXORS AND SIGNAL CONDITIONING

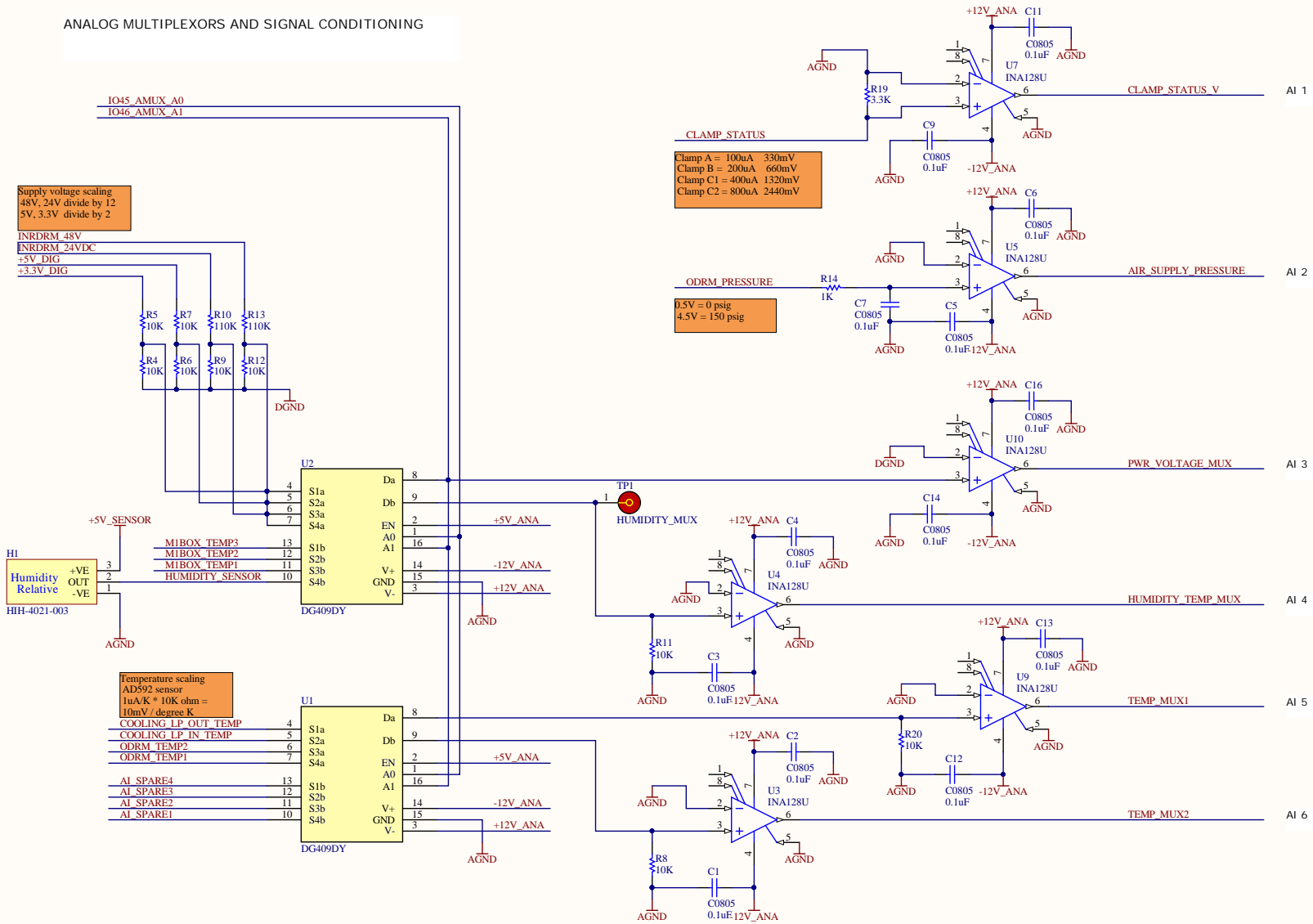
Supply voltage scaling
 48V, 24V divide by 12
 5V, 3.3V divide by 2


Humidity Relative
 HIH-4021-003

Temperature scaling
 AD592 sensor
 $1\mu A/K \times 10K \text{ ohm} = 10mV / \text{degree K}$

Clamp A = 100uA 330mV
 Clamp B = 200uA 660mV
 Clamp C1 = 400uA 1320mV
 Clamp C2 = 800uA 2440mV

0.5V = 0 psig
 4.5V = 150 psig



	UC OBSERVATORIES	K1DM3	KECK 1 DEPLOYABLE TERTIARY MIRROR
	DRAWN: SANDFORD		LE0100 M1 electronics box
	ENGR: SANDFORD		RotationFOB - Analog signals
	872-LE0120-RotationFOB_r00.PrlPcb 872-LE0120-4-RotationFOB_Analog_SchDoc		872-LE0120-4

1 2 3 4 5 6

A

A

B

B

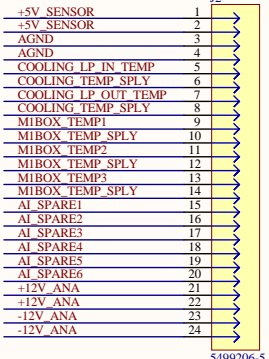
C

C

D

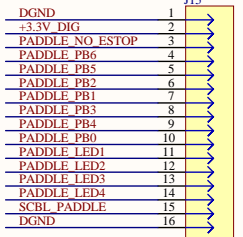
D

SPARES-MIBOX_INTERNAL



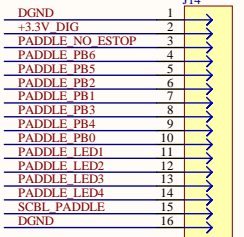
5499206-5

HAND_PADDLE-SERVICE



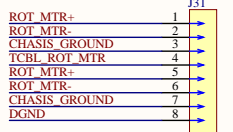
5499206-3

HAND_PADDLE-TEST



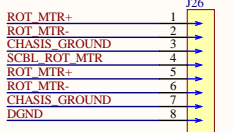
5499206-3

ROTATION_MOTOR-TOWER



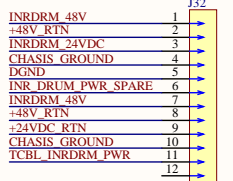
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ROTATION_MOTOR-SERVICE



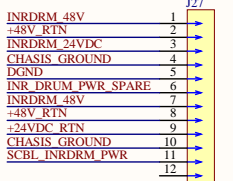
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INNER_DRUM_POWER-TOWER



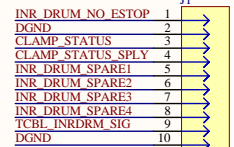
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INNER_DRUM_POWER-SERVICE



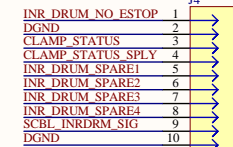
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INNER_DRUM_SIGNAL-TOWER



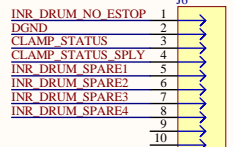
5499206-1

INNER_DRUM_SIGNAL-SERVICE



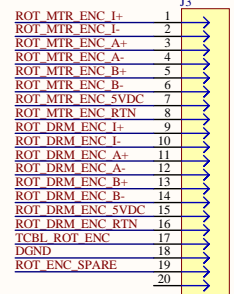
5499206-1

INNER_DRUM_SIGNAL-TEST



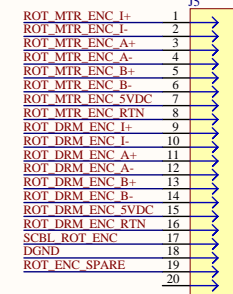
5499206-1

ROTATION_ENCODERS-TOWER



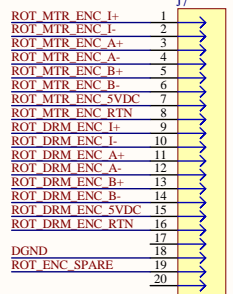
5499206-4

ROTATION_ENCODERS-SERVICE



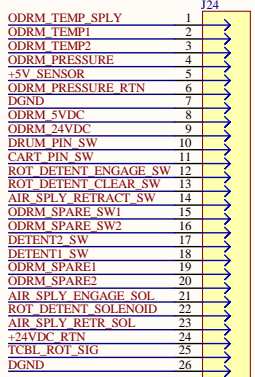
5499206-4

ROTATION_ENCODERS-TEST



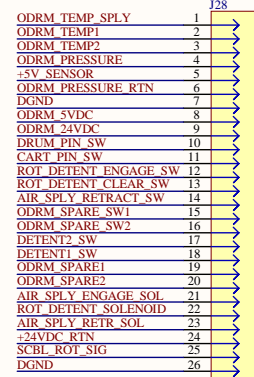
5499206-4

OUTER_DRUM_SIGNAL-TOWER



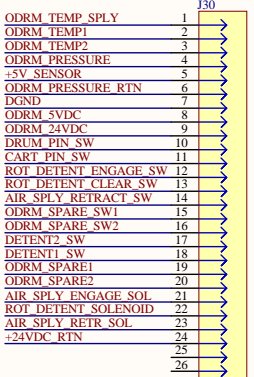
5499206-6

OUTER_DRUM_SIGNAL-SERVICE



5499206-6

OUTER_DRUM_SIGNAL-TEST



5499206-6

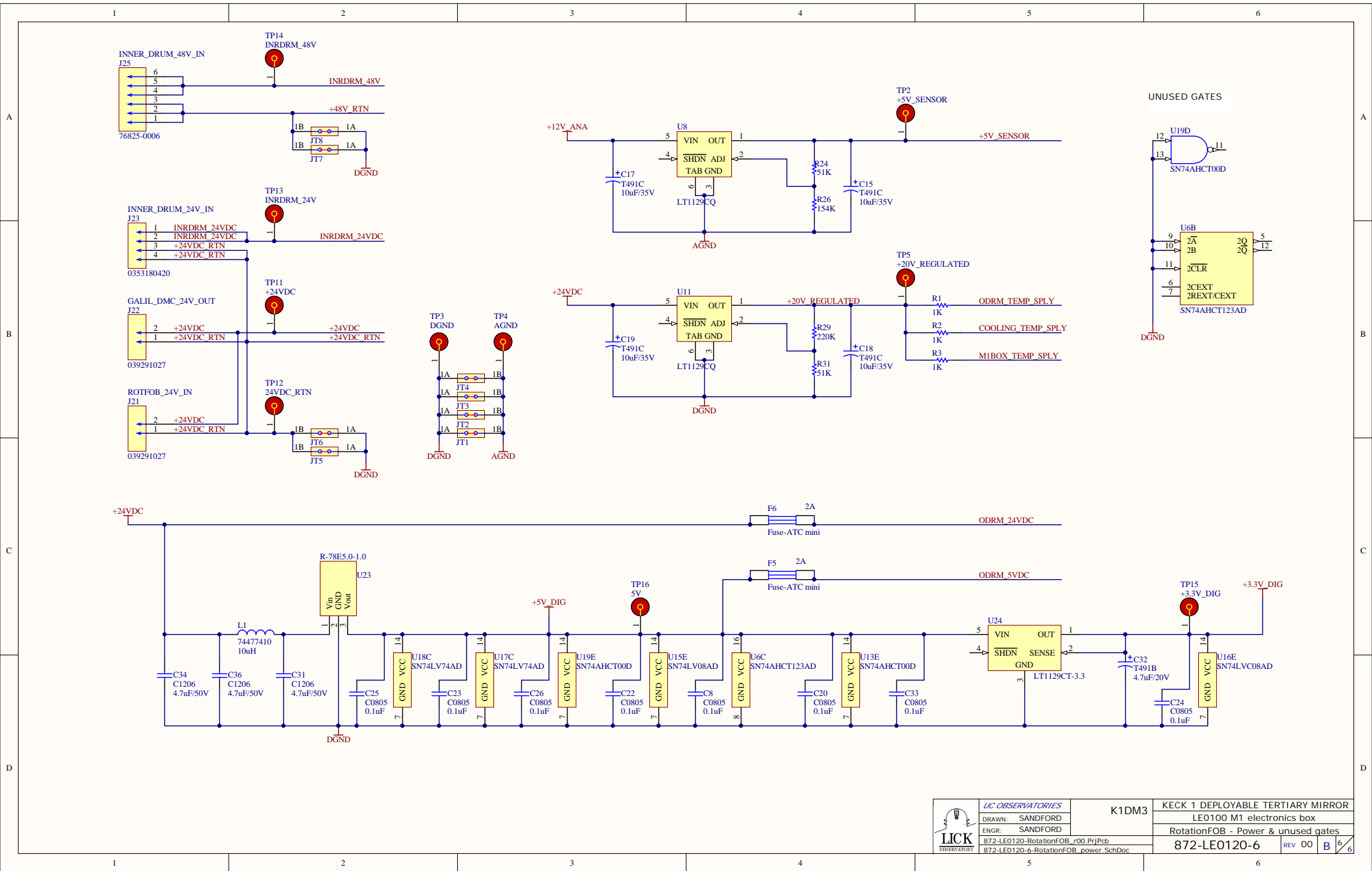


UC OBSERVATORIES
 DRAWN: SANDFORD
 ENGR: SANDFORD
 872-LE0120-RotationFOB_r00.PjtPcb
 872-LE0120-5-RotationFOB_OutputConn_SchDoc

K1DM3

KECK 1 DEPLOYABLE TERTIARY MIRROR
 LE0100 M1 electronics box
 RotationFOB - Output connectors
 872-LE0120-5 REV 00 B 5/6

1 2 3 4 5 6



LIC OBSERVATORIES
 DRAWN: SANDFORD
 ENGR: SANDFORD
 872-LEO120-RotationFOB_r00.PriPcb
 872-LEO120-6-RotationFOB_power_SchDoc

K1DM3	KECK 1 DEPLOYABLE TERTIARY MIRROR	
	LEO100 M1 electronics box	
RotationFOB - Power & unused gates		
872-LEO120-6		REV 00