

ISSUE	DATE	DESCRIPTION	CHECKED	APPROVED
1	04/20/04	INITIAL RELEASE		
2	12/08/2009	ECO-0716		

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Azimuth drive azdrvW132.Sch	sheet 5
Azimuth A enc azaencW142.Sch	sheet 3
Azimuth B enc azbencW143.Sch	sheet 4
estopW118 estopW118.Sch	sheet 8

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TEMPLATE: Eost_tabloid_SUBS

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CONFIGURED	DATE

Eos Technologies, Inc
3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE
APF Azimuth Block Diagram

DOCUMENT NUMBER
SCH-5389-2

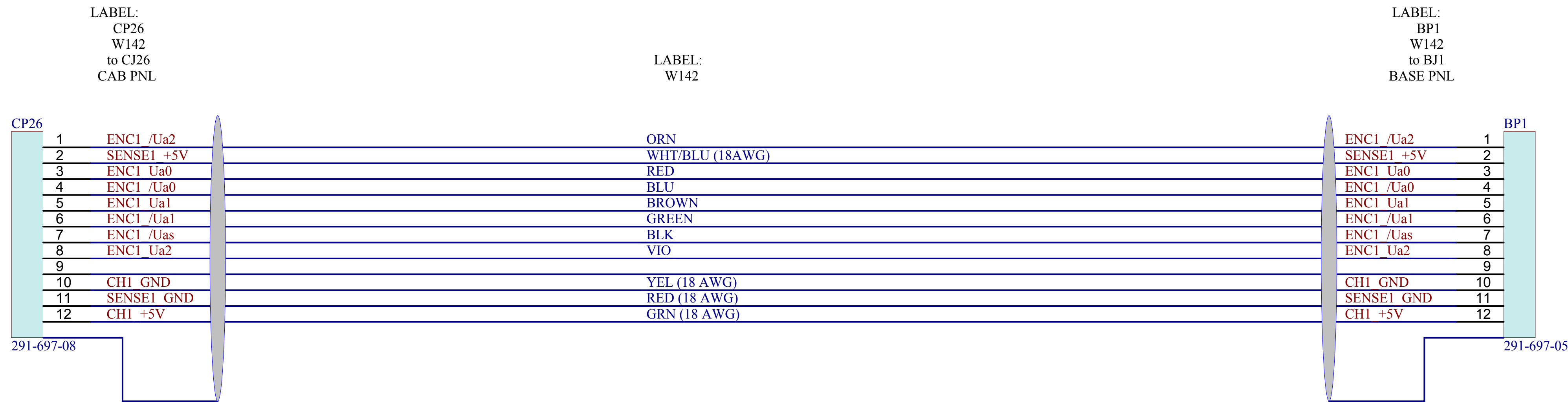
EastConfig: **SCH-5389-2** SHEET 1 OF 47

SIZE
A3

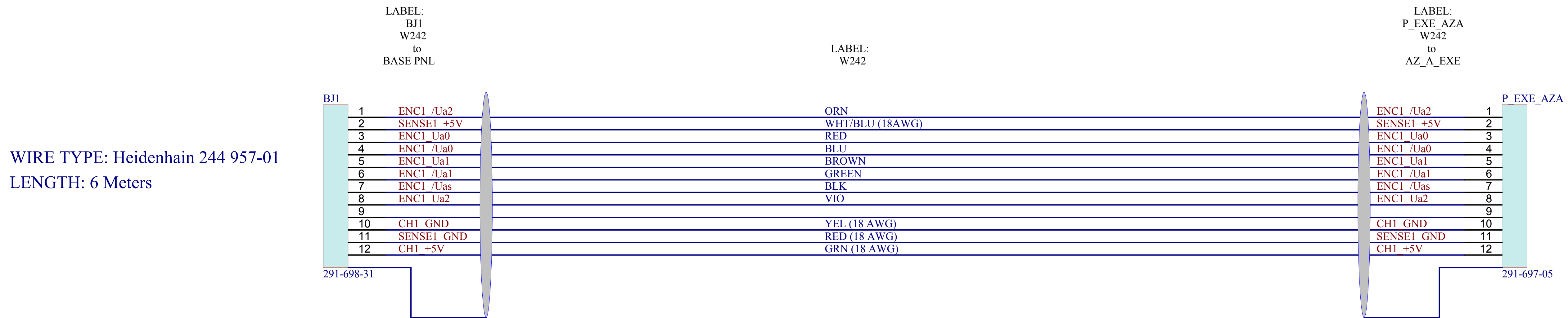
APF Azimuth Block Diagram
SCH-5389-2

AZIMUTH A MOTOR ENCODER INPUTS

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WIRE TYPE: Heidenhain 244 957-01
LENGTHS: 19 Meters



WIRE TYPE: Heidenhain 244 957-01
LENGTH: 6 Meters



1 METER Pigtail on Encoder

ENCODER HEAD

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TITLE

APF Azimuth Encoder A

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

SCH-5389-1

SHEET 3

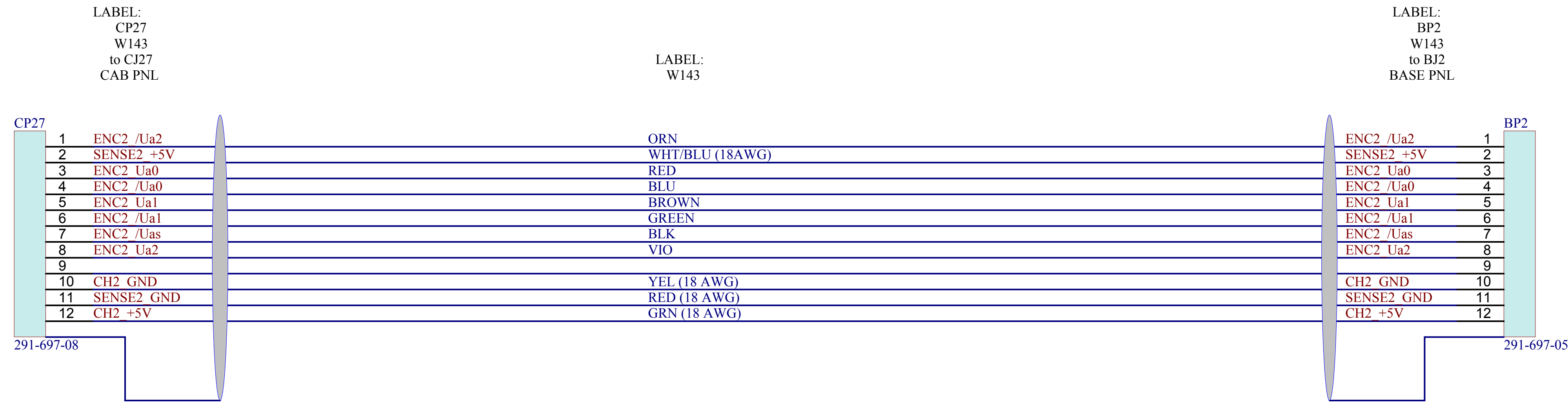
OF 47

APF Azimuth Encoder A

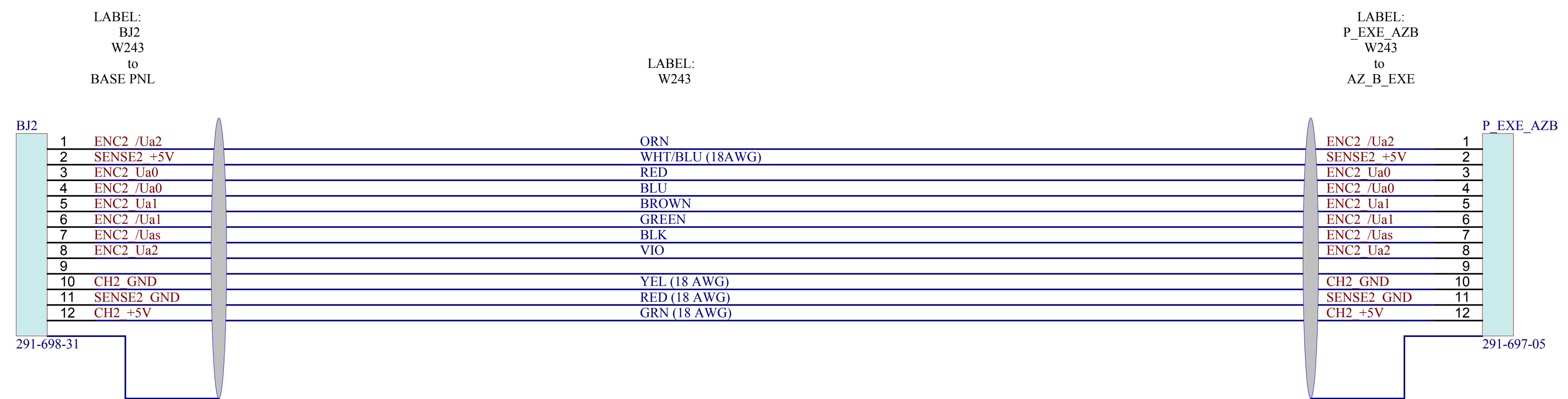
SCH-5389-2

AZIMUTH B ENCODER INPUTS

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WIRE TYPE: Heidenhain 244 957-01
LENGTHS: 19 Meters



WIRE TYPE: Heidenhain 244 957-01
LENGTH: 6 Meters



1 METER Pigtail on Encoder

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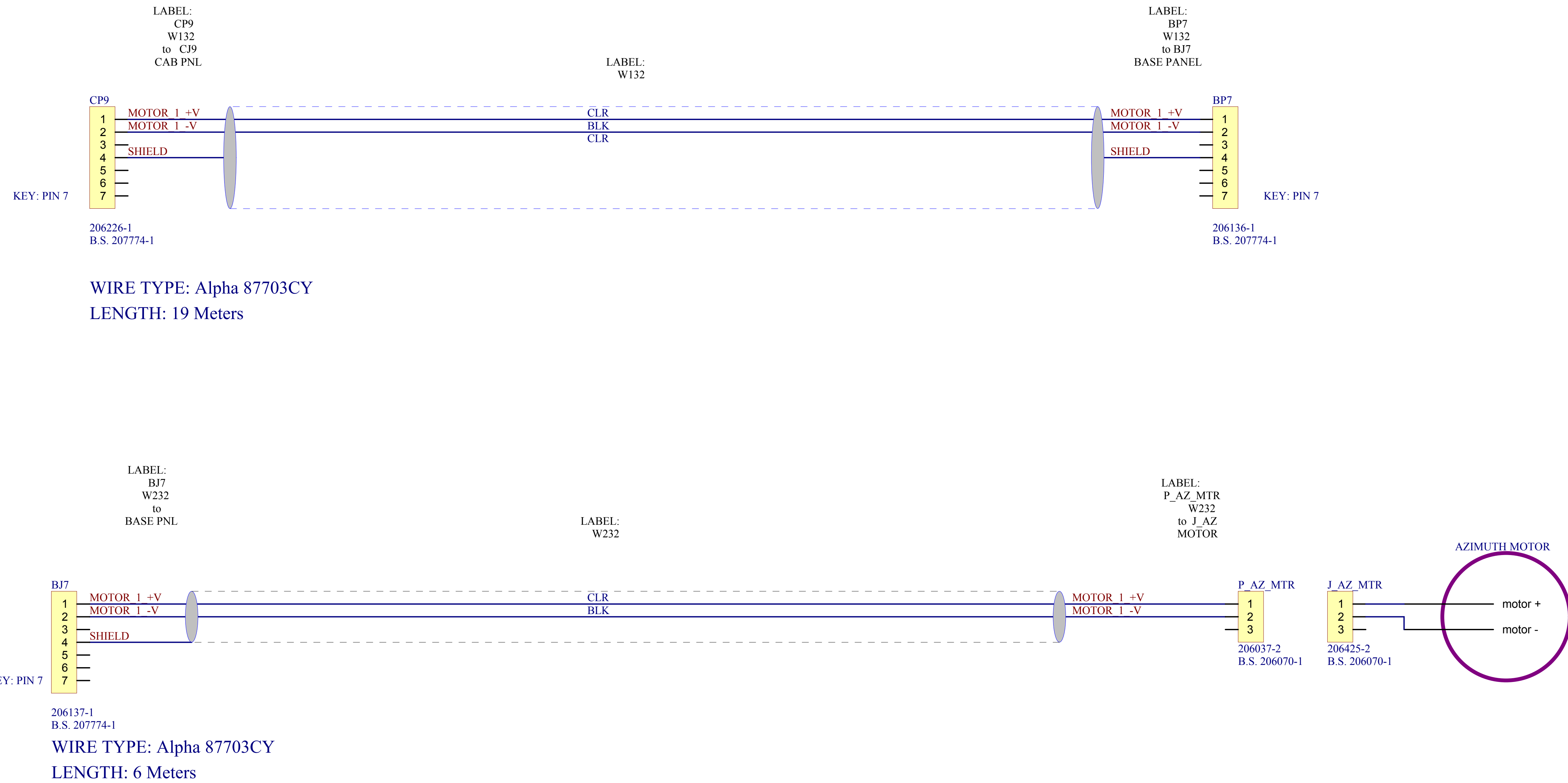
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TITLE APF Azimuth Encoder B	
DOCUMENT NUMBER SCH-5389-2	SIZE A3
EastConfig SCH-5389-1	SHEET 4 OF 47

APF Azimuth Encoder B
SCH-5389-2

AZIMUTH MOTOR DRIVE



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TITLE

APF Azimuth Motor Drive

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig SCH-5389-1

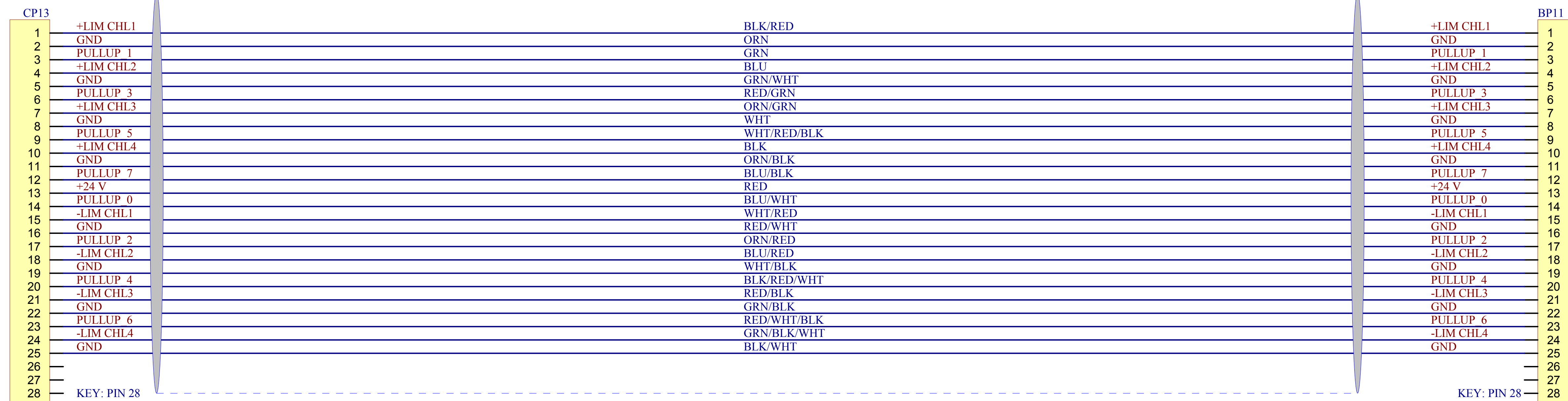
SHEET 5 OF 47

AZIMUTH LIMIT INPUTS

Label:
CP13
W124
to CJ13
CAB_PNL

Label:
W124

Label:
BP11
W124
to BJ11
BASE PNL



206039-1
B.S. 206070-1
WIRE TYPE: ALPHA 6348
LENGTH: 19 Meters

205839-3
B.S. 206070-1

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\azimitsW124.SCHDOC
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TITLE
APF Azimuth Limits

DOCUMENT NUMBER
SCH-5389-2

SIZE
A3

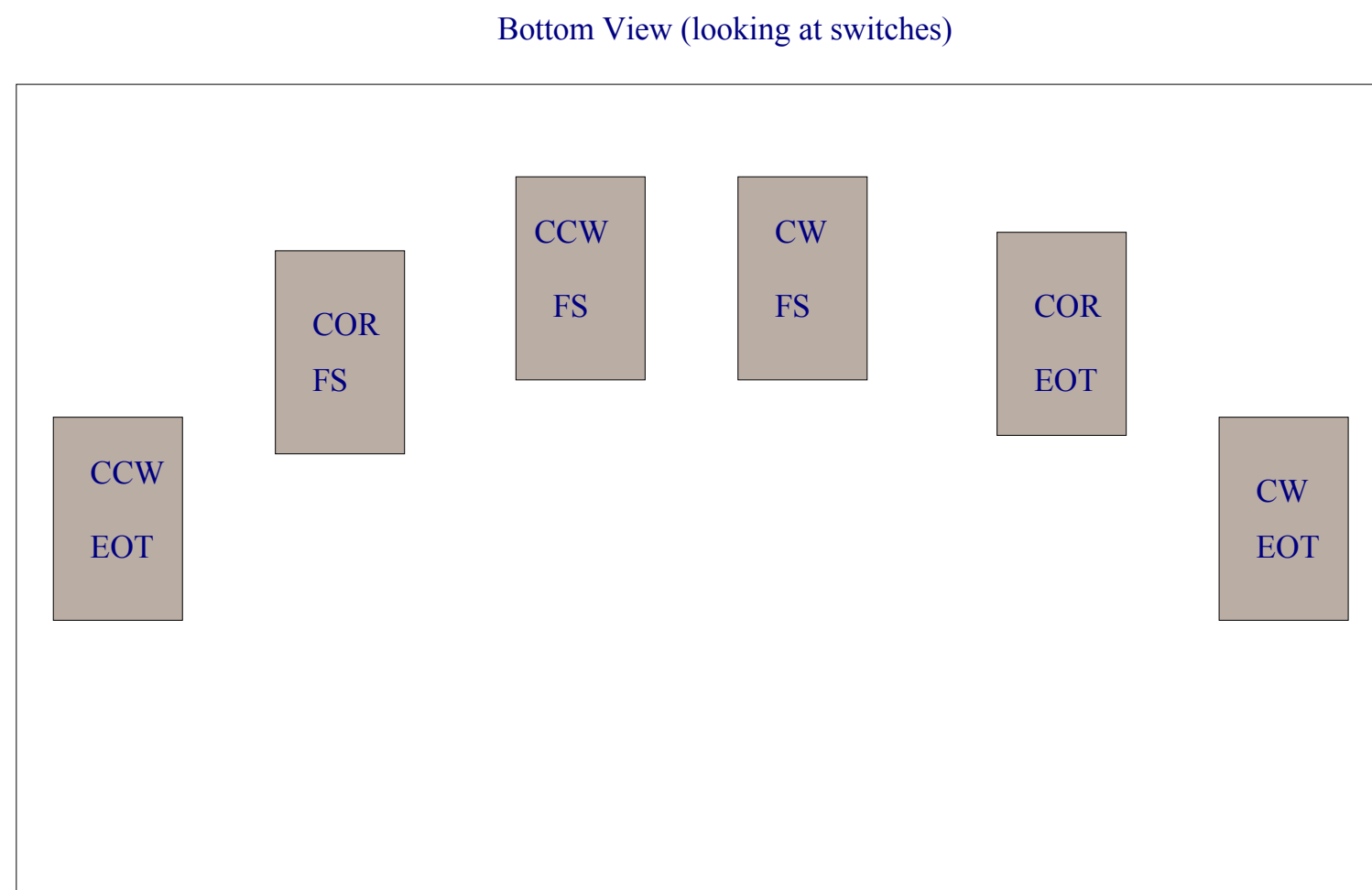
EastConfig SCH-5389-1 SHEET 6 OF 47

AZIMUTH LIMIT SWITCHES

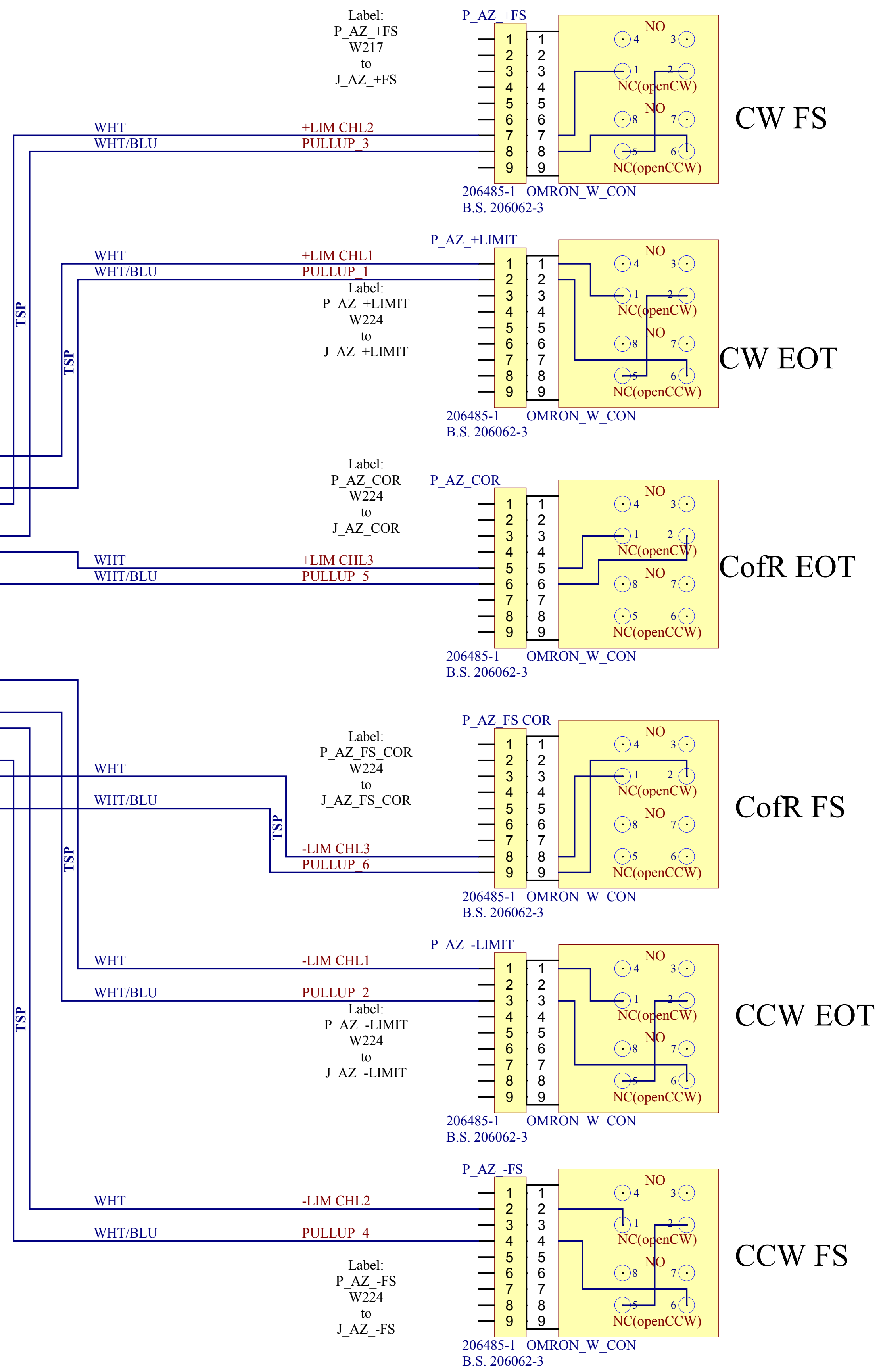


WIRE TYPE: ALPHA 6348
 LENGTH: 6 Meters

WIRE TYPE: Raychem M27500-20S TSP
 LENGTH: TBD at installation



Note:
 CONNECTORS INSTALLED IN LIMIT SWITCHES ARE AMP 206486-2. This is accomplished as follows:
 Modify a 206062-3 backshell by sawing it perpendicular to the thread line 12mm from the threaded end of the backshell.
 Screw this modified piece of backshell onto a 206486-2 connector.
 Using a press, carefully insert the backshell/connector into the threaded hole in the switch.



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\azimitsW224.SCHDOC
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TITLE

APF Azmiuth Limit Switches

DOCUMENT NUMBER

SCH-5389-2

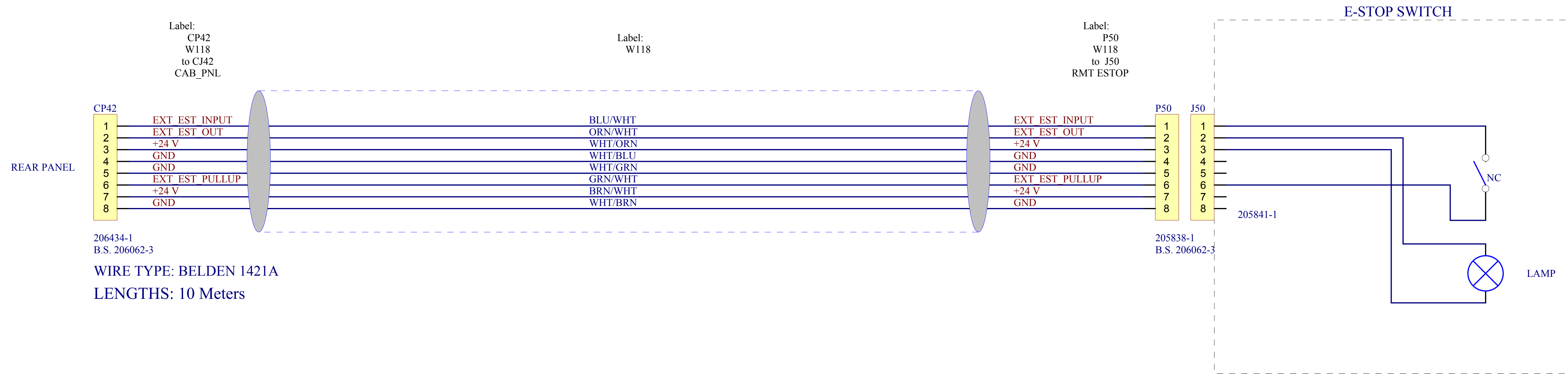
SIZE

A3

EastConfig SCH-5389-2

SHEET 7 OF 47

EXTERNAL ESTOP



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TITLE

APF Emergency Stop Switch

DOCUMENT NUMBER

SCH-5389-2

SIZE

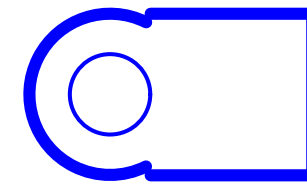
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EostConfig SCH-5389-1

SHEET 8 OF 47

GROUNDING CABLE

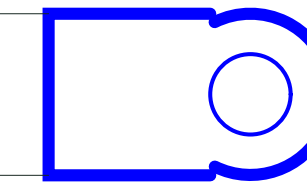
TCC BACK PANEL
GROUNDING BOLT



RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W117
TCC PNL BOLT

LENGTHS: 19 Meters

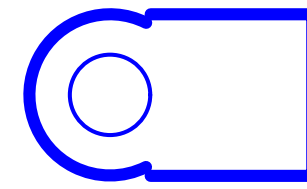


RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W117
TELESCOPE
BASE PNL

TELESCOPE BASE

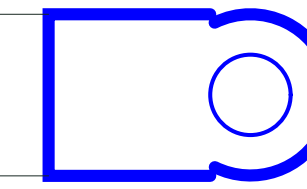
TCC BACK PANEL
GROUNDING BOLT



RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W217
TELESCOPE
PNL BOLT

LENGTH: 6.5 Meters

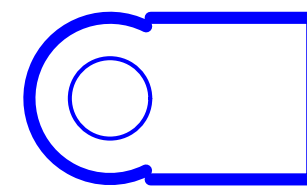


RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W217
TELESCOPE
BASE

TELESCOPE YOKE

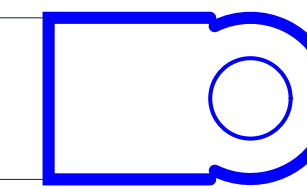
TELE BASE PNL
GROUNDING BOLT



RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W117b
TELESCOPE
TCC

LENGTH: 0.5 Meter

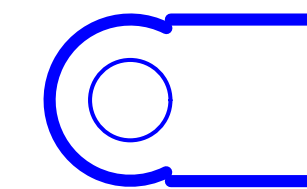


RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W117b
TELESCOPE
YOKE PNL BOLT

TELESCOPE BASE

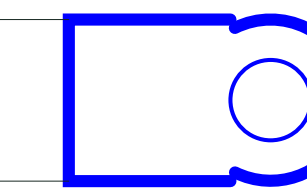
TELE YOKE PNL
GROUNDING BOLT



RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W217b
TELESCOPE
PNL BOLT

LENGTH: 1.1 Meter

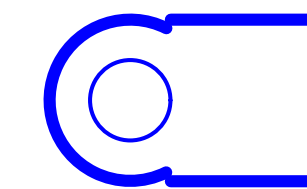


RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W217b
TELESCOPE
YOKE GND LUG

TELESCOPE YOKE PANEL

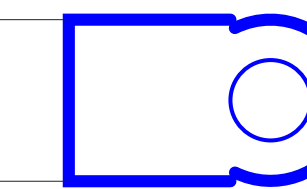
TELE YOKE PNL
GROUNDING BOLT



RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W317
TELESCOPE
YOKE GND LUG

LENGTH: 12.1 Meters



RINGTERM_LG (NEWARK P/N 84F292)

LABEL:
W317
TELESCOPE
CTR SEC
GND LUG

TELESCOPE CENTER SECTION

WIRE TYPE: CAROLPRENE 2GA WELDING CABLE

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TITLE

APF Telescope Grounding Cables

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

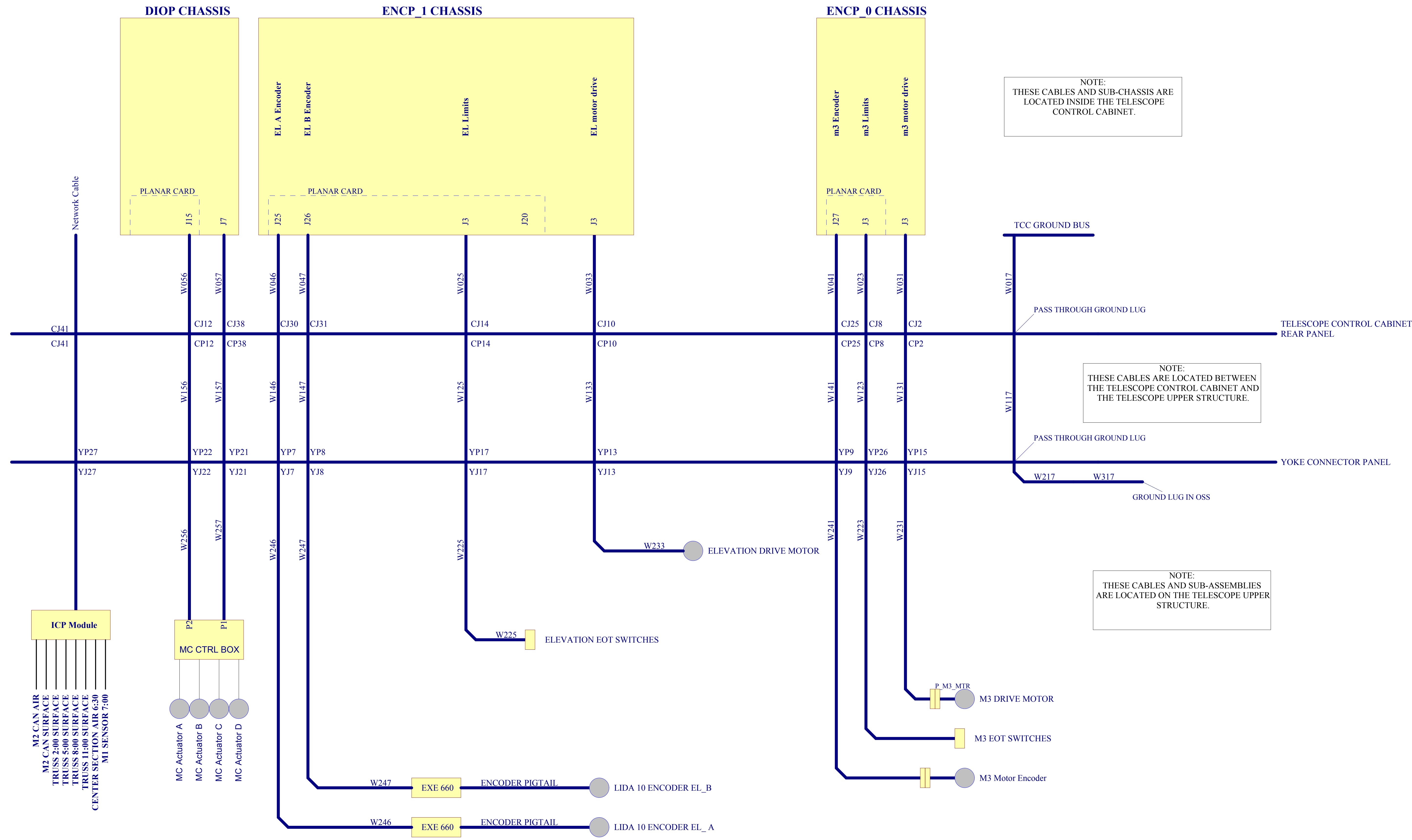
SCH-5389-1

SHEET 9

OF

47

SCH-5389-2 APF Telescope Grounding Cables



NOTE:
THESE CABLES AND SUB-CHASSIS ARE
LOCATED INSIDE THE TELESCOPE
CONTROL CABINET.

NOTE:
THESE CABLES ARE LOCATED BETWEEN
THE TELESCOPE CONTROL CABINET AND
THE TELESCOPE UPPER STRUCTURE.

NOTE:
THESE CABLES AND SUB-ASSEMBLIES
ARE LOCATED ON THE TELESCOPE UPPER
STRUCTURE.

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TUCSON, ARIZONA 85706 USA

TITLE
APF Elevation Block Diagram

DOCUMENT NUMBER
SCH-5389-2

EastConfig SCH-5389-1 SHEET 10 OF 47

SIZE
A3

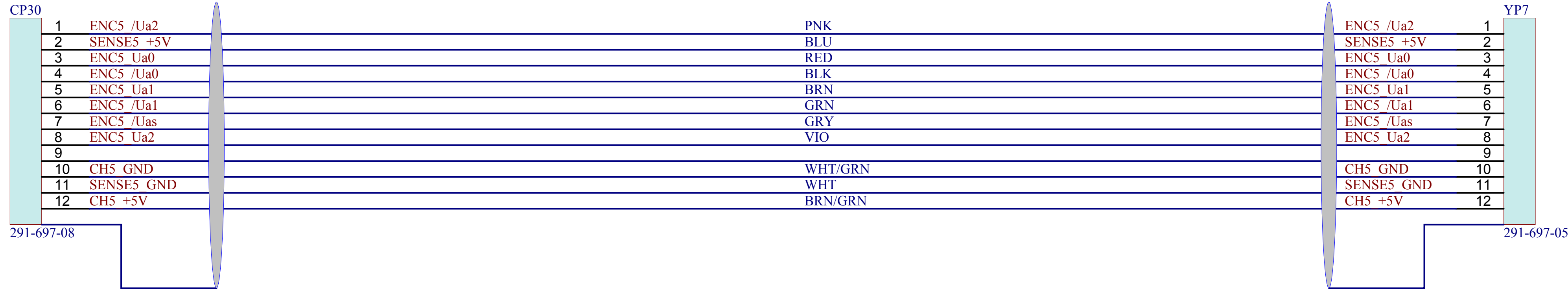
APF Elevation Block Diagram
SCH-5389-2

ELEVATION A ENCODER INPUTS

LABEL:
CP30
W146
to CJ30
CAB PNL

LABEL:
W146

LABEL:
YP7
W146
to YJ7
YOKE PNL



WIRE TYPE: Heidenhain 244 957-01
LENGTHS: 7.5 Meters

LABEL:
YJ7
W246
to
YOKE PNL

LABEL:
W246

LABEL:
P_EXE_ELA
W246
to
EL_A_EXE



WIRE TYPE: Heidenhain 244 957-01
LENGTH: 6 Meters

EXE_ELA
1 Le1
2 /Le1
3 /U1
4 /U1
5 Le2
6 /Le2
7 Le0
8 /Le0
9 SHIELD

GREEN
YELLOW
BROWN
WHITE
BLUE
RED
GRAY
PINK

Le1
/Le1
/U1
/U1
Le2
/Le2
/Le0
/Le0
SHIELD

1 METER Pigtail on Encoder

ENCODER HEAD

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TITLE

APF Elevation Encoder A

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

SCH-5376-2

SHEET 11

OF 47

ELEVATION B ENCODER INPUTS

LABEL:
CP31
W147
to CJ31
CAB PNL

LABEL:
W147

LABEL:
YP8
W147
to YJ8
YOKE PNL



WIRE TYPE: Heidenhain 244 957-01
LENGTHS: 7.5 Meters

LABEL:
YJ8
W247
to
YOKE PNL

LABEL:
W247

LABEL:
P_EXE_ELB
W247
to
J_EXE_ELB



WIRE TYPE: Heidenhain 244 957-01
LENGTH: 6 Meters



1 METER Pigtail on Encoder

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TUCSON, ARIZONA 85706 USA

TITLE

APF Elevation Encoder B

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

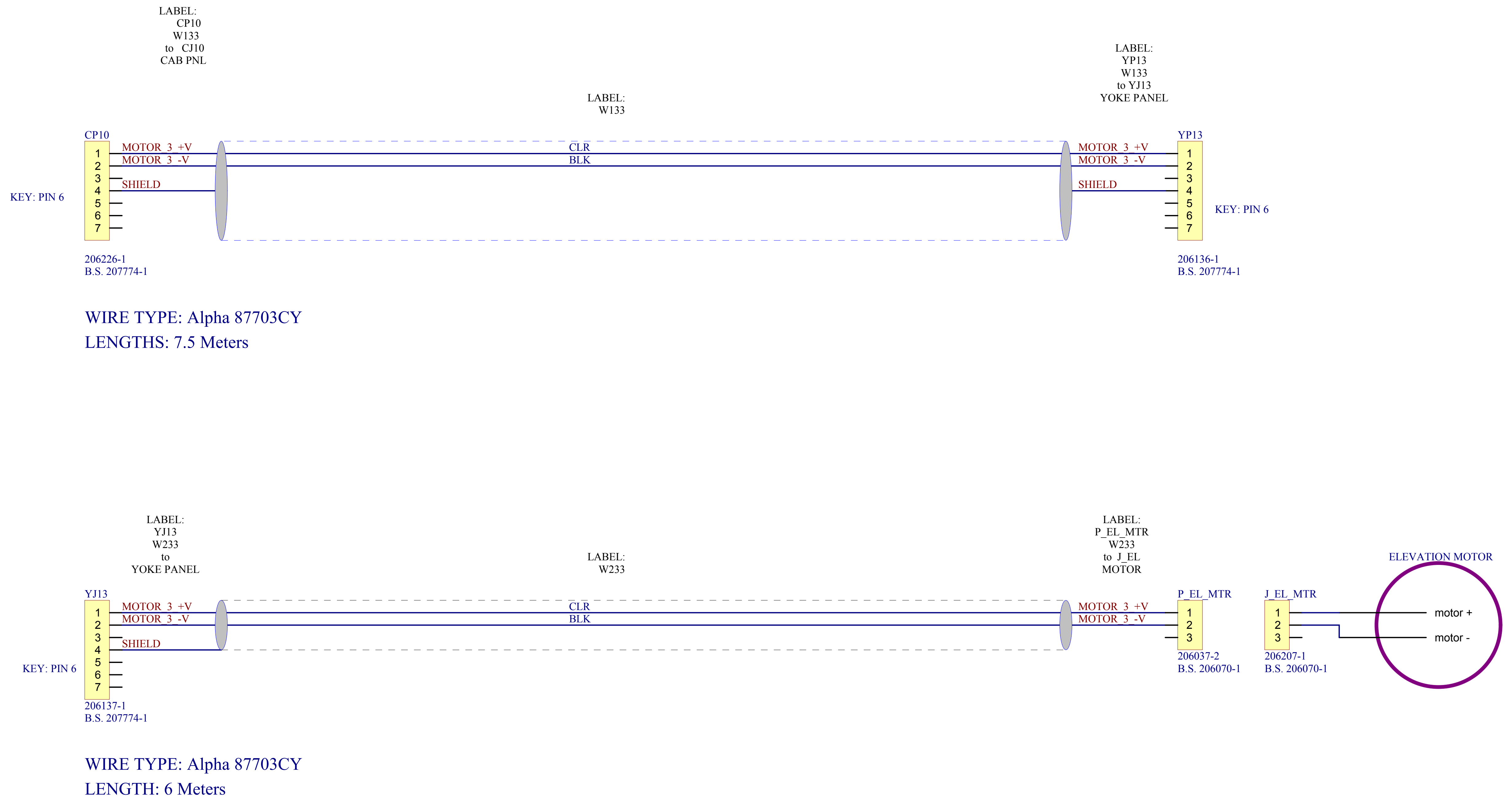
EastConfig

SCH-5389-1

SHEET 12

OF 47

ELEVATION MOTOR DRIVE



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TUCSON, ARIZONA 85706 USA

TITLE

APF Elevation Motor Drive

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig SCH-5389-2

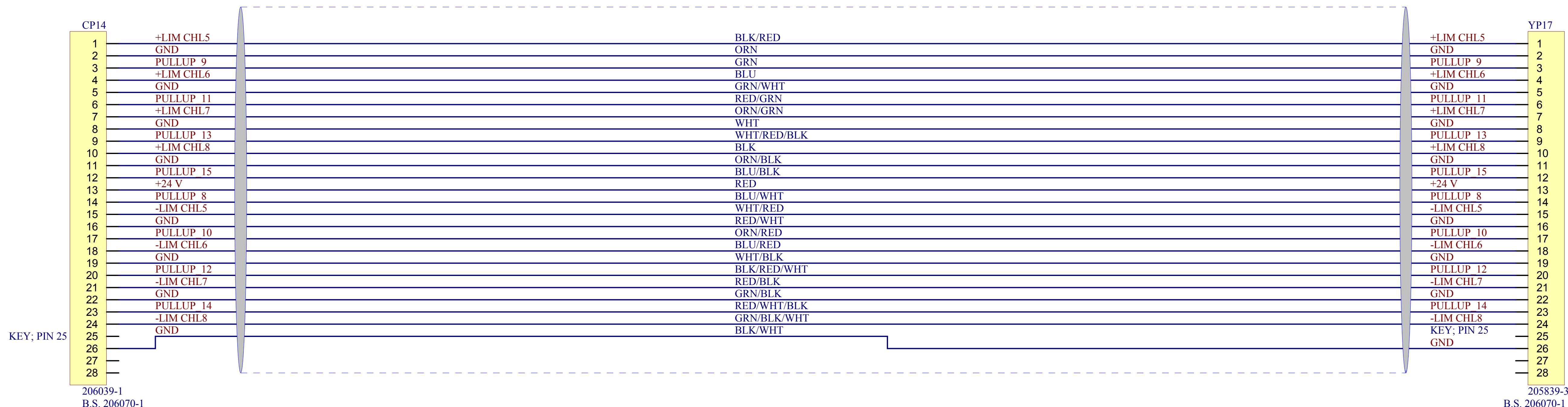
SHEET 13 OF 47

ELEVATION LIMIT INPUTS

Label:
CP14
W125
to CJ14
CAB_PNL

Label:
W125

Label:
YP17
W125
to YJ17
YOKE PNL



KEY; PIN 25

206039-1
B.S. 206070-1

205839-3
B.S. 206070-1

WIRE TYPE: ALPHA 6348
LENGTHS: 7.5 Meters

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TITLE

APF Elevation Limits

DOCUMENT NUMBER

SCH-5389-2

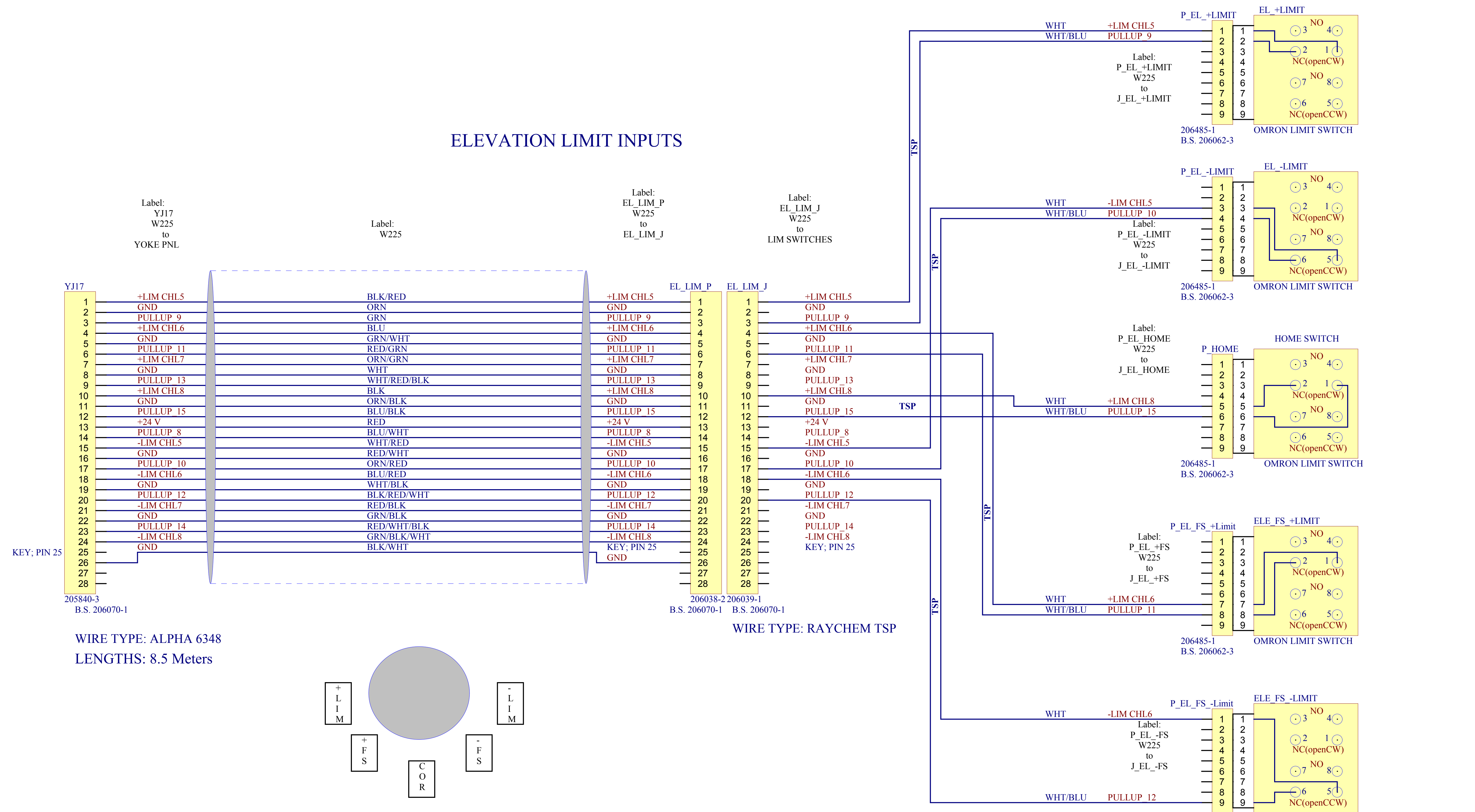
SIZE

A3

EastConfig SCH-5389-1

SHEET 14 OF 47

ELEVATION LIMIT INPUTS



YJ17

1	+LIM CHL5
2	GND
3	PULLUP 9
4	+LIM CHL6
5	GND
6	PULLUP 11
7	+LIM CHL7
8	GND
9	PULLUP 13
10	+LIM CHL8
11	GND
12	PULLUP 15
13	+24 V
14	PULLUP 8
15	-LIM CHL5
16	GND
17	PULLUP 10
18	-LIM CHL6
19	GND
20	PULLUP 12
21	-LIM CHL7
22	GND
23	PULLUP 14
24	-LIM CHL8
25	GND
26	
27	
28	

205840-3
B.S. 206070-1

EL_LIM_P

1	+LIM CHL5
2	GND
3	PULLUP 9
4	+LIM CHL6
5	GND
6	PULLUP 11
7	+LIM CHL7
8	GND
9	PULLUP 13
10	+LIM CHL8
11	GND
12	PULLUP 15
13	+24 V
14	PULLUP 8
15	-LIM CHL5
16	GND
17	PULLUP 10
18	-LIM CHL6
19	GND
20	PULLUP 12
21	-LIM CHL7
22	GND
23	PULLUP 14
24	-LIM CHL8
25	KEY; PIN 25
26	GND
27	
28	

206038-2
B.S. 206070-1

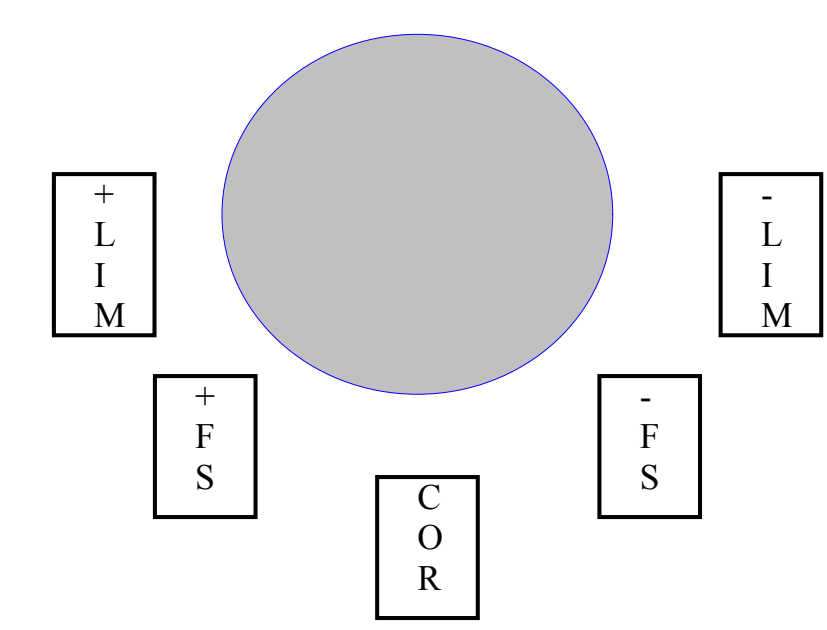
EL_LIM_J

1	+LIM CHL5
2	GND
3	PULLUP 9
4	+LIM CHL6
5	GND
6	PULLUP 11
7	+LIM CHL7
8	GND
9	PULLUP 13
10	+LIM CHL8
11	GND
12	PULLUP 15
13	+24 V
14	PULLUP 8
15	-LIM CHL5
16	GND
17	PULLUP 10
18	-LIM CHL6
19	GND
20	PULLUP 12
21	-LIM CHL7
22	GND
23	PULLUP 14
24	-LIM CHL8
25	KEY; PIN 25
26	GND
27	
28	

206039-1
B.S. 206070-1

WIRE TYPE: ALPHA 6348
LENGTHS: 8.5 Meters

WIRE TYPE: RAYCHEM TSP



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\ellimits\W225.SCHDOC
PRINTED 12/8/2009 4:00:09 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.
3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE	
APF Elevation Limit Switches	
DOCUMENT NUMBER	SIZE
SCH-5389-2	A3
EastConfig SCH-5389-2	SHEET 15 OF 47

APF Elevation Limit Switches
SCH-5389-2

Label:
CP12
W156
to CJ12
CAB_PNL

Label:
W156

Label:
YP16
W156
to YJ16
YOKE PNL

CP12				YP22
1	BC IN 0	BLK/RED/GRN		1 BC IN 0
2	BC IN 1	BLU/RED		2 BC IN 1
3	BC IN 2	RED/GRN/BLK		3 BC IN 2
4	BC IN 3	WHT/GRN/RED		4 BC IN 3
5	BC IN 4	ORN/WHT/BLK		5 BC IN 4
6	BC IN 5	GRN/BLK/ORN		6 BC IN 5
7	BC IN 6	ORN/RED		7 BC IN 6
8	BC IN 7	RED/BLK		8 BC IN 7
9	BC IN 8	GRN/BLK		9 BC IN 8
10	BC OUT 0	ORN/BLK		10 BC OUT 0
11	BC OUT 1	ORN/BLK/GRN		11 BC OUT 1
12	BC OUT 2	WHT/BLK		12 BC OUT 2
13	BC OUT 3	BLU		13 BC OUT 3
14	GND	BLK		14 GND
15	GND	WHT		15 GND
16	GND	BLK/WHT/ORN		16 GND
17	GND	WHT/RED		17 GND
18	GND	BLU/WHT/BLK		18 GND
19	GND	RED/WHT/BLK		19 GND
20	BC IN PULLUP 0	GRN/WHT/BLK		20 BC IN PULLUP 0
21	BC IN PULLUP 1	BLK/RED		21 BC IN PULLUP 1
22	BC IN PULLUP 2	ORN		22 BC IN PULLUP 2
23	BC IN PULLUP 3	RED		23 BC IN PULLUP 3
24	BC IN PULLUP 4	BLU/WHT/ORN		24 BC IN PULLUP 4
25	BC IN PULLUP 5	BLU/BLK		25 BC IN PULLUP 5
26	BC IN PULLUP 6	GRN		26 BC IN PULLUP 6
27	BC IN PULLUP 7	WHT/BLK/RED		27 BC IN PULLUP 7
28	BC IN PULLUP 8	RED/WHT		28 BC IN PULLUP 8
29	+24 V	GRN/WHT		29 +24 V
30	+24 V	BLK/WHT		30 +24 V
31	+24 V	BLU/WHT		31 +24 V
32	+24 V	WHT/ORN/RED		32 +24 V
33	+24 V	ORN/WHT/BLU		33 +24 V
34	+24 V	WHT/BLU/RED		34 +24 V
35	+24 V	ORN/GRN		35 +24 V
36	+24 V	RED/GRN		36 +24 V
37	+24 V	BLK/WHT/RED		37 +24 V
38				38
39				39
40				40
41				41
42				42
43				43
44				44
45				45
46				46
47				47
48				48
49				49
50				50
51				51
52				52
53				53
54				54
55				55
56				56
57				57
				58
				59
				60
				61
				62
				63

MIRROR COVER FAILSAFE I/O

KEY: PIN 56

206437-1
B.S. 207774-1

KEY: PIN 56

205842-1
B.S. 207774-1

WIRE TYPE: ALPHA 6349
LENGTHS: 7.5 Meters

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PRINTED 12/8/2009 3:59:44 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF Mirror Cover Interface

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

SCH-5376-2

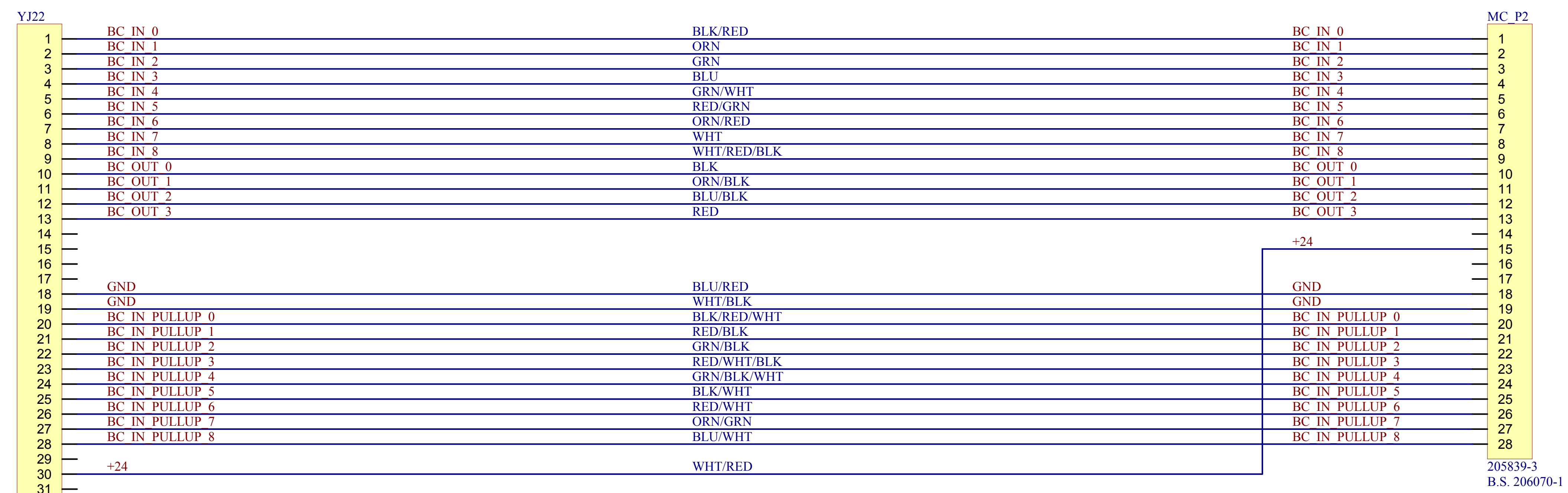
SHEET 16

OF 47

Label:
YJ16
W256
to
YOKE PNL

Label:
W256

Label:
P_MIRCVR
W256
to
MIR_CVR
CTRL BOX



MIRROR COVER I/O

KEY: PIN 56

205843-1
B.S. 207774-1

WIRE TYPE: ALPHA 6348
LENGTH: 12.1M

205839-3
B.S. 206070-1

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TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.
3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE
APF Mirror Cover Interface

DOCUMENT NUMBER
SCH-5389-2

SIZE
A3

EastConfig SCH-5376-2 SHEET 17 OF 47

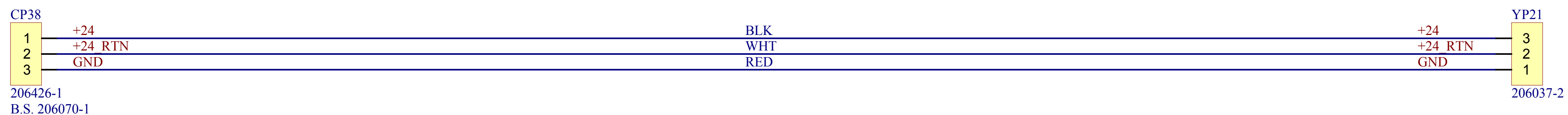
SCH-5389-2
APF Mirror Cover Interface

M1 MIRROR COVER POWER

Label:
CP38
W157
to CJ38
CAB_PNL

Label:
W157

Label:
YP21
W157
to YJ21
YOKE PNL



WIRE TYPE: BELDEN 3 COND. 12 GA.
LENGTHS: 7.5 Meters

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PRINTED 12/8/2009 3:59:45 PM
TEMPLATE: Eost_tabloid_SUBS

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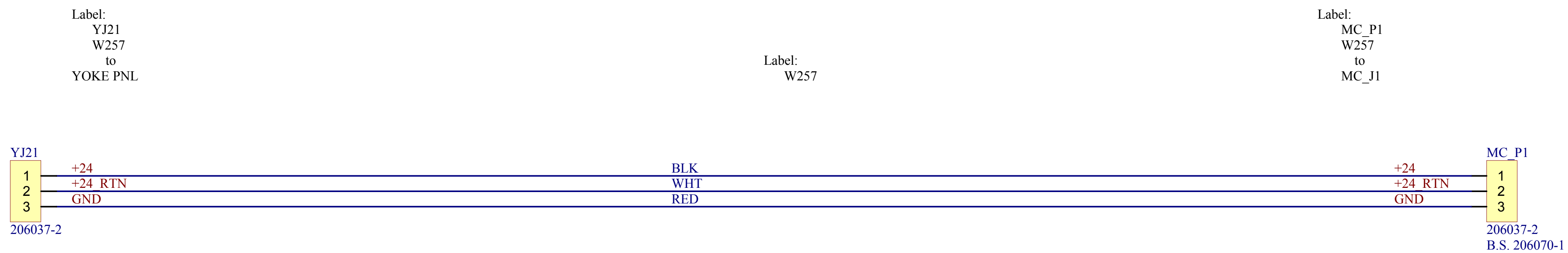
TITLE
APF Mirror Cover Power

DOCUMENT NUMBER
SCH-5389-2

EostConfig SCH-5376-2 SHEET 18 OF 47

SIZE
A3

M1 MIRROR COVER POWER



WIRE TYPE: ALPHA 1892
LENGTH: 12.1M

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\APFmc_powerW257.SCHDOC
PRINTED 12/8/2009 3:59:46 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF Mirror Cover Power

DOCUMENT NUMBER

SCH-5389-2

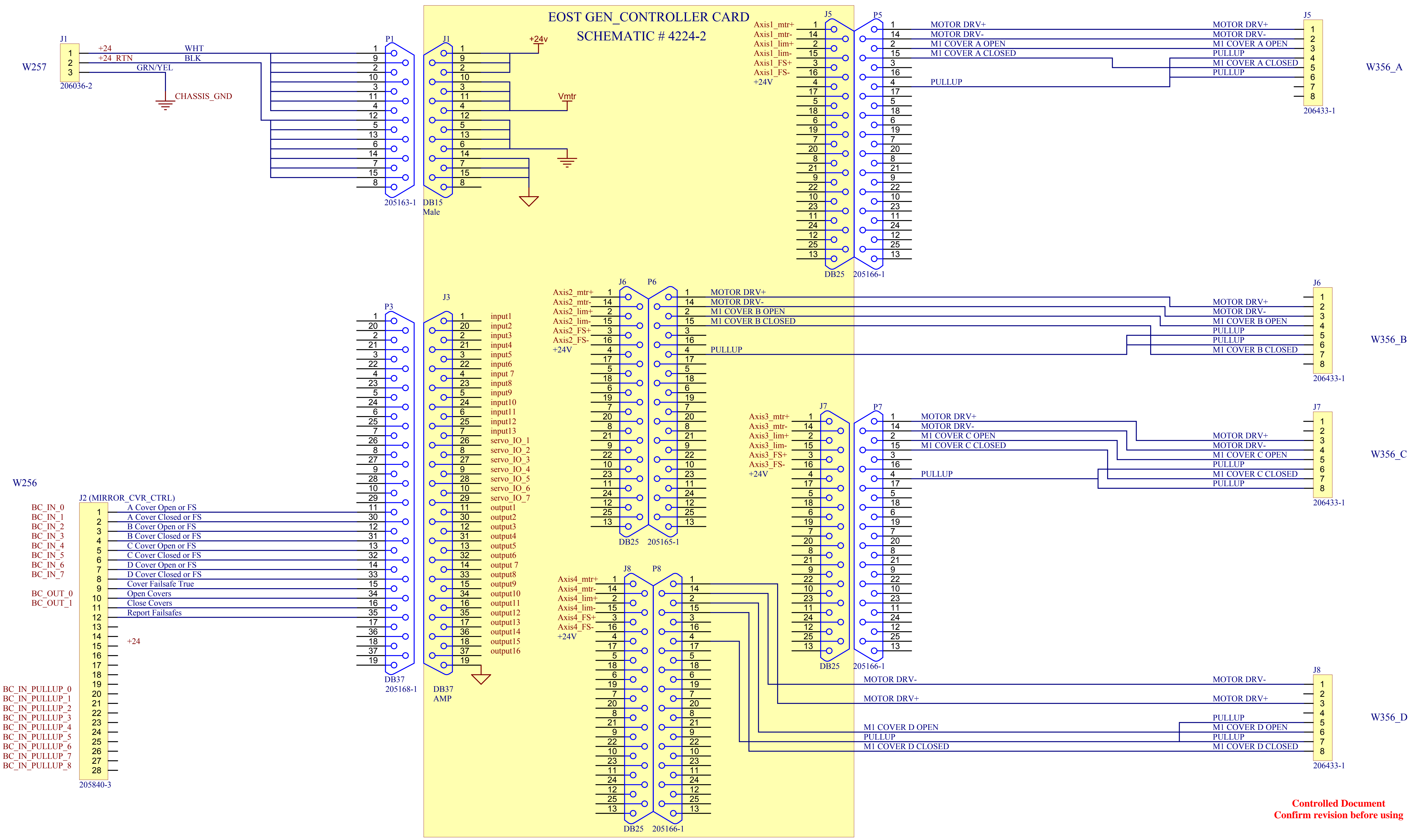
SIZE

A3

EastConfig SCH-5376-2

SHEET 19 OF 47

EOST GEN_CONTROLLER CARD
SCHEMATIC # 4224-2



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\APFmirror_cover_ctrl_box.SCHDOC
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TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF Mirror Cover Controller

DOCUMENT NUMBER

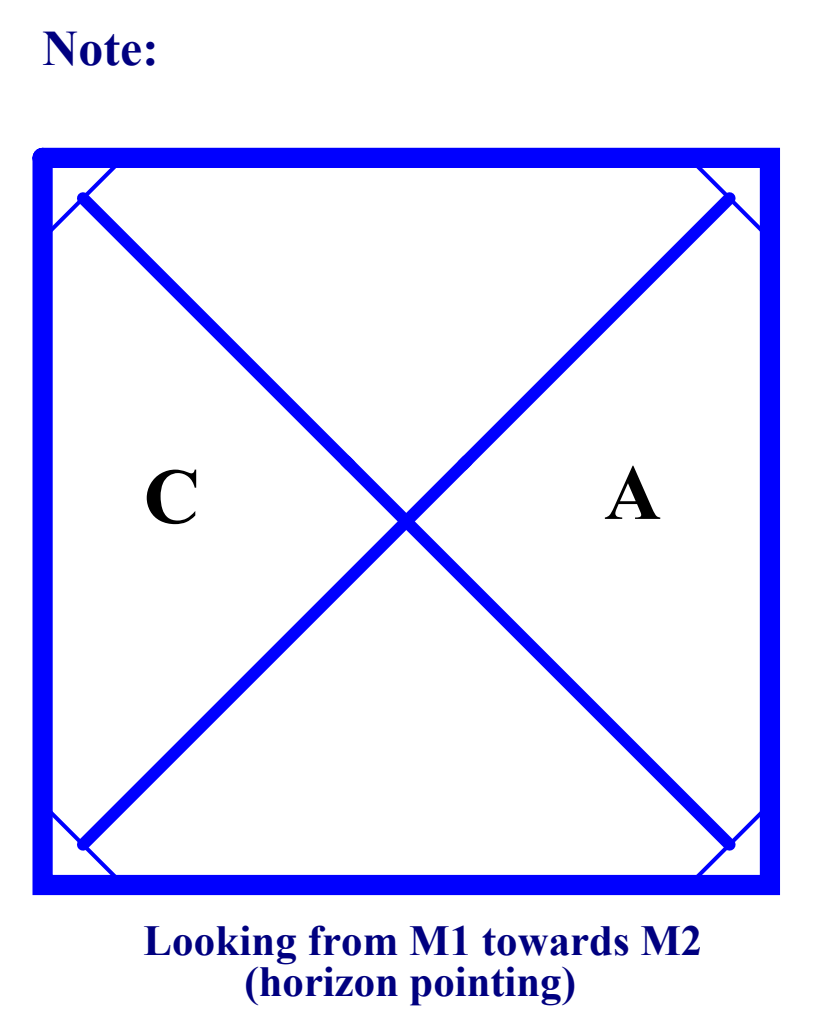
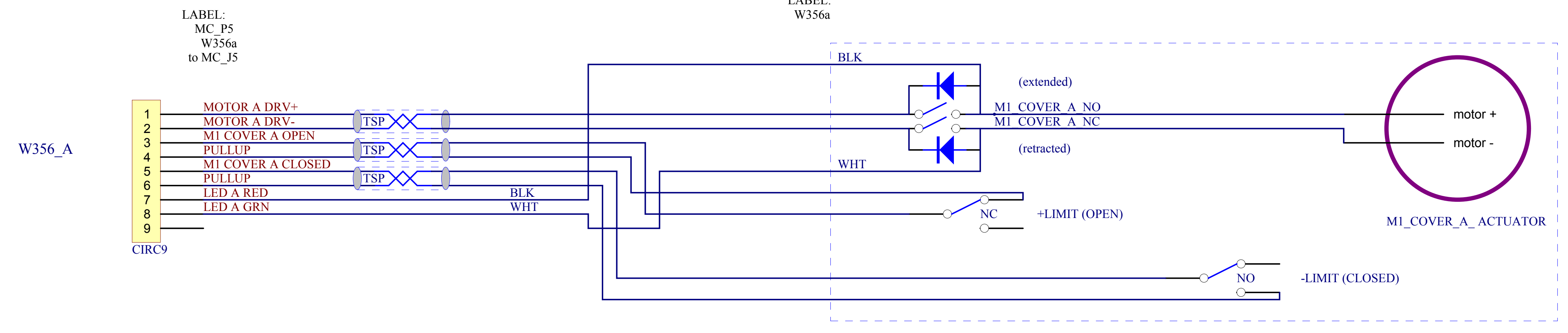
SCH-5389-2

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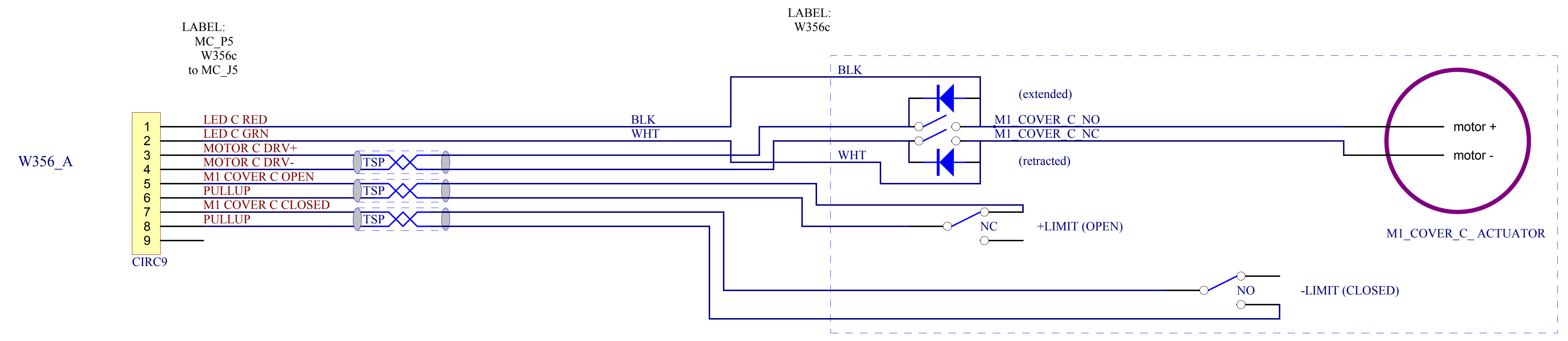
A3

EastConfig SCH-5376-2

SHEET 20 OF 47



Note:
Mirror covers A and C close first and open last, operating as a pair.
Mirror covers B and D close last and open first, operating as a pair.



WIRE TYPE: Raychem TSP

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PRINTED 12/8/2009 3:59:42 PM
TEMPLATE: Eost_tabloid_SUBS

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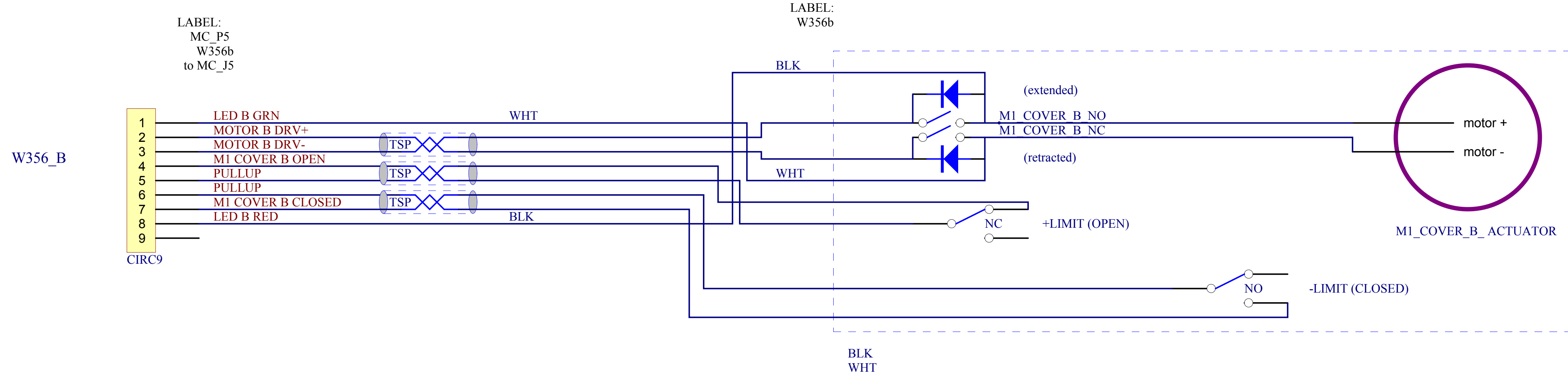
TITLE
APF Mirror Cover Actuators A_C

DOCUMENT NUMBER
SCH-5389-2

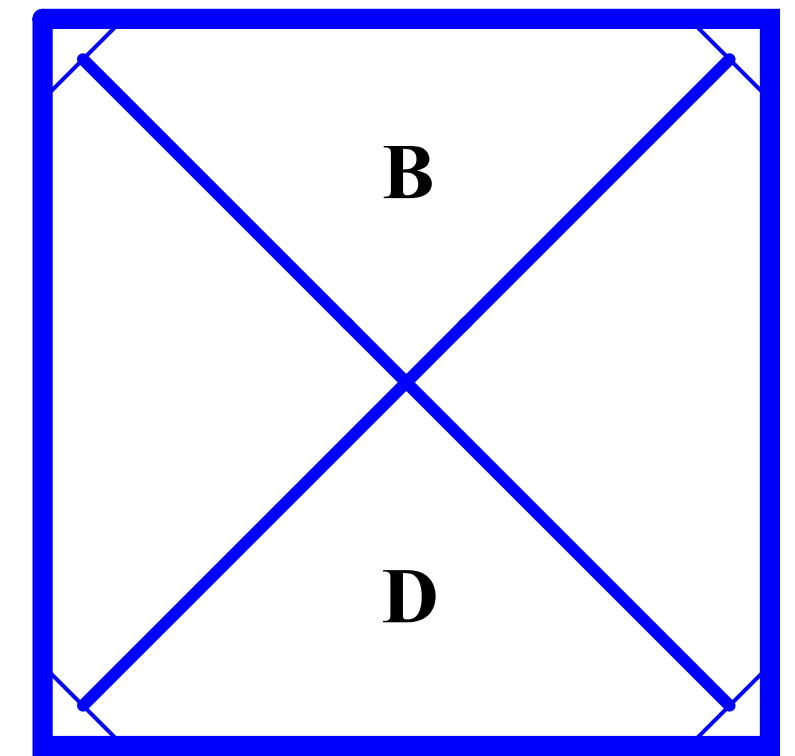
SIZE
A3

EastConfig SCH-5376-2 SHEET 21 OF 47

SCH-5389-2 APF Mirror Cover Actuators A_C

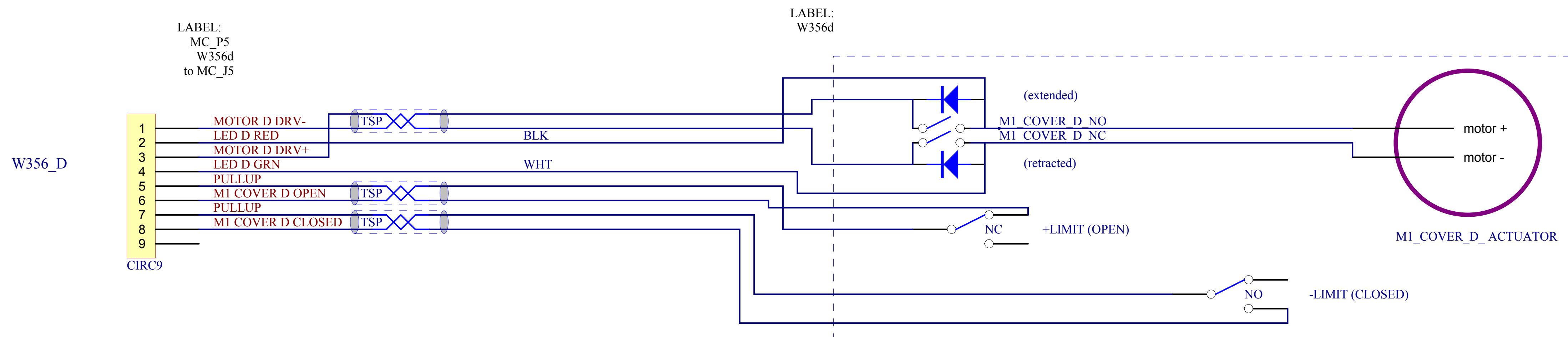


Note:



Looking from M1 towards M2
(horizon pointing)

Note:
Mirror covers A and C close first and open last,
operating as a pair.
Mirror covers B and D close last and open first,
operating as a pair.



WIRE TYPE: Raychem TSP

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TITLE

APF Mirror Cover Actuators B_D

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

SCH-5376-2

SHEET 21

OF 47

M3 ENCODER INPUTS

LABEL:
CP25
W141
to CJ25
CAB PNL

LABEL:
W141

LABEL:
YP9
W141
to T19
YOKE PNL



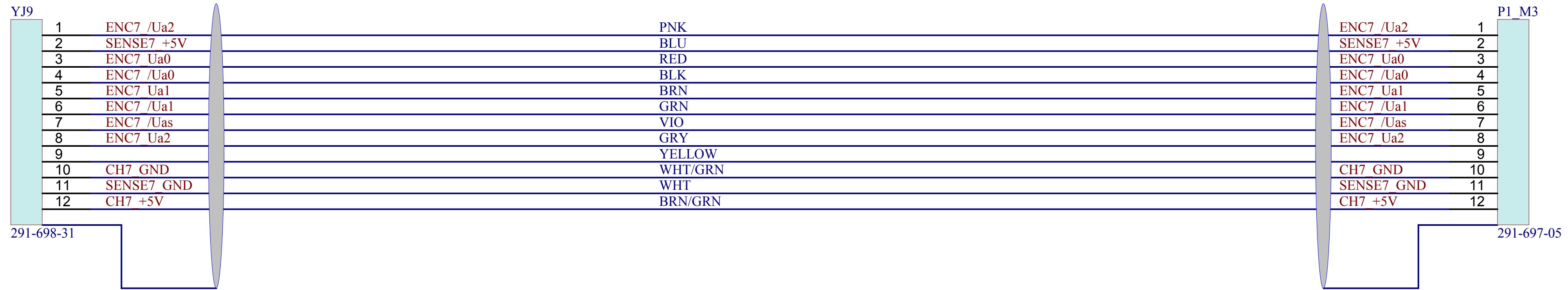
WIRE TYPE: Heidenhain 244 957-01
LENGTHS: 7.5 Meters

LABEL:
YJ9
W241
to
YOKE PNL

LABEL:
W241

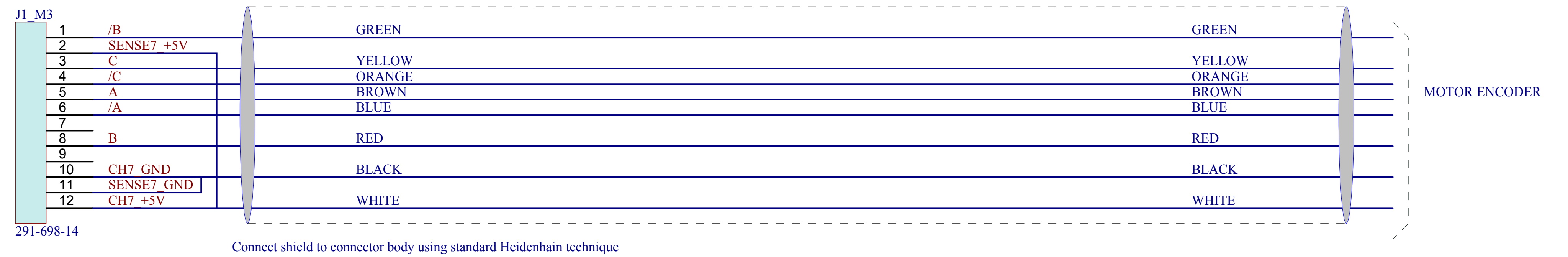
LABEL:
P1_M3 ENC
W241
to
J1_M3 ENC

WIRE TYPE: Heidenhain 244 957-01
LENGTH: 14M



1 METER Pigtail on Encoder
Flying Lead

LABEL:
J1_M3
W341



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PRINTED 12/8/2009 4:00:38 PM
TEMPLATE: Eost_tabloid_SUBS

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3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF Tertiary Mirror Rotator Encoder

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

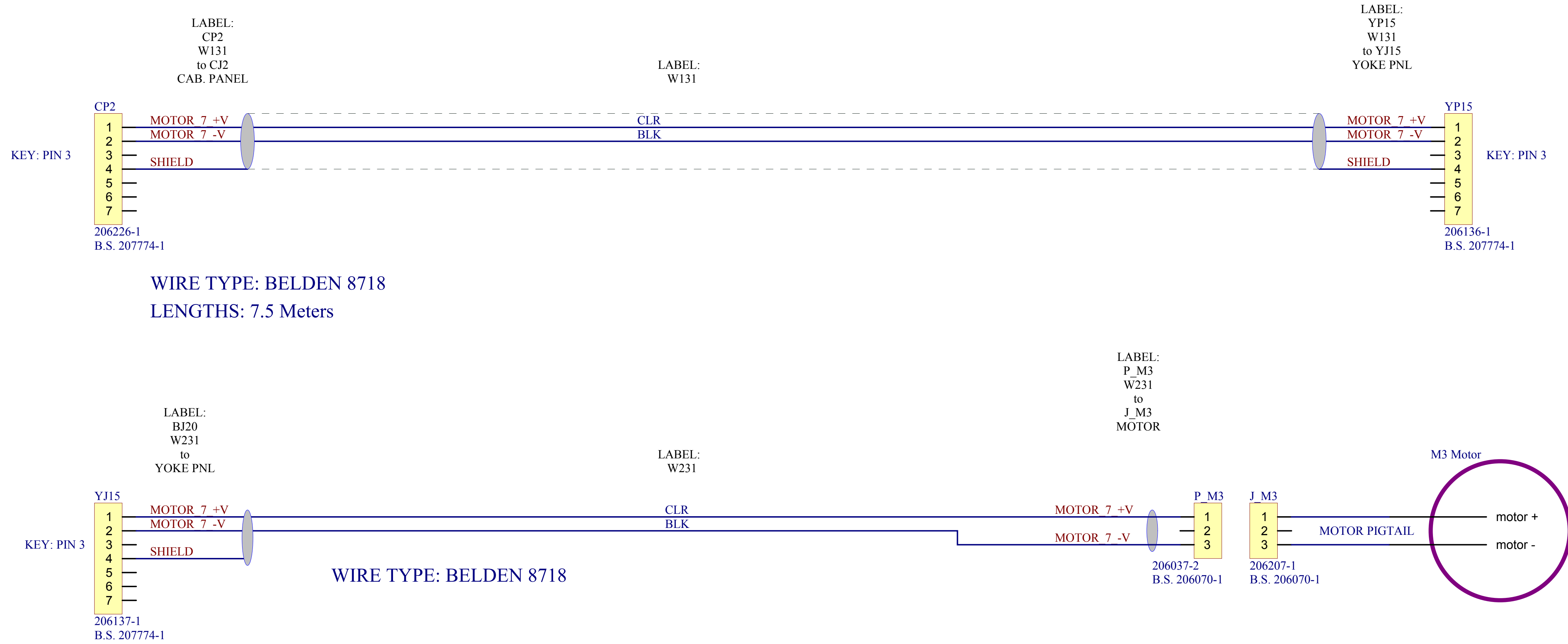
EastConfig

SCH-5376-2

SHEET 22

OF 47

M3 MIRROR ROTATOR MOTOR DRIVES



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m3drvW131.SCHDOC
PRINTED 12/8/2009 4:00:37 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF Tertiary Mirror Rotator Motor Drive

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

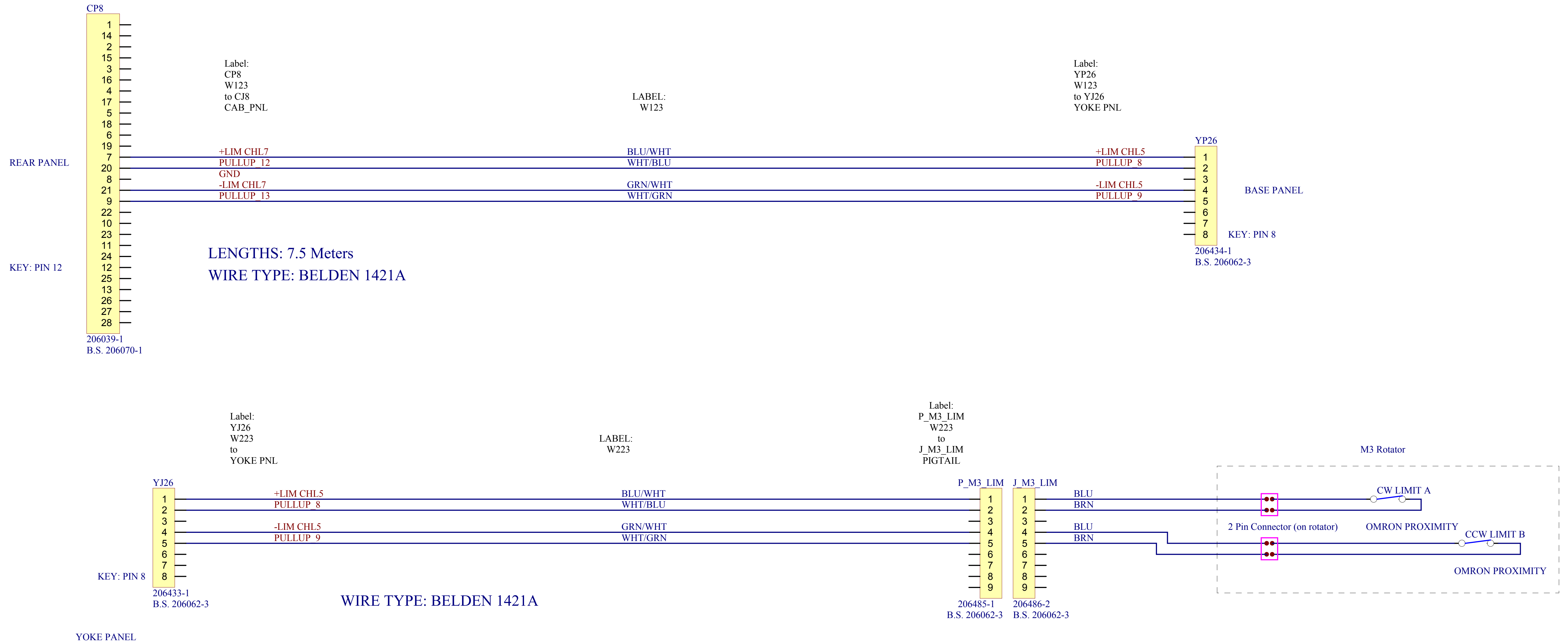
EastConfig

SCH-5376-2

SHEET 23

OF 47

M3 LIMIT SWITCHES



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m3limW123.SCHDOC
PRINTED 12/8/2009 4:00:40 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF Tertiary Mirror Rotator Limits

DOCUMENT NUMBER

SCH-5389-2

SIZE

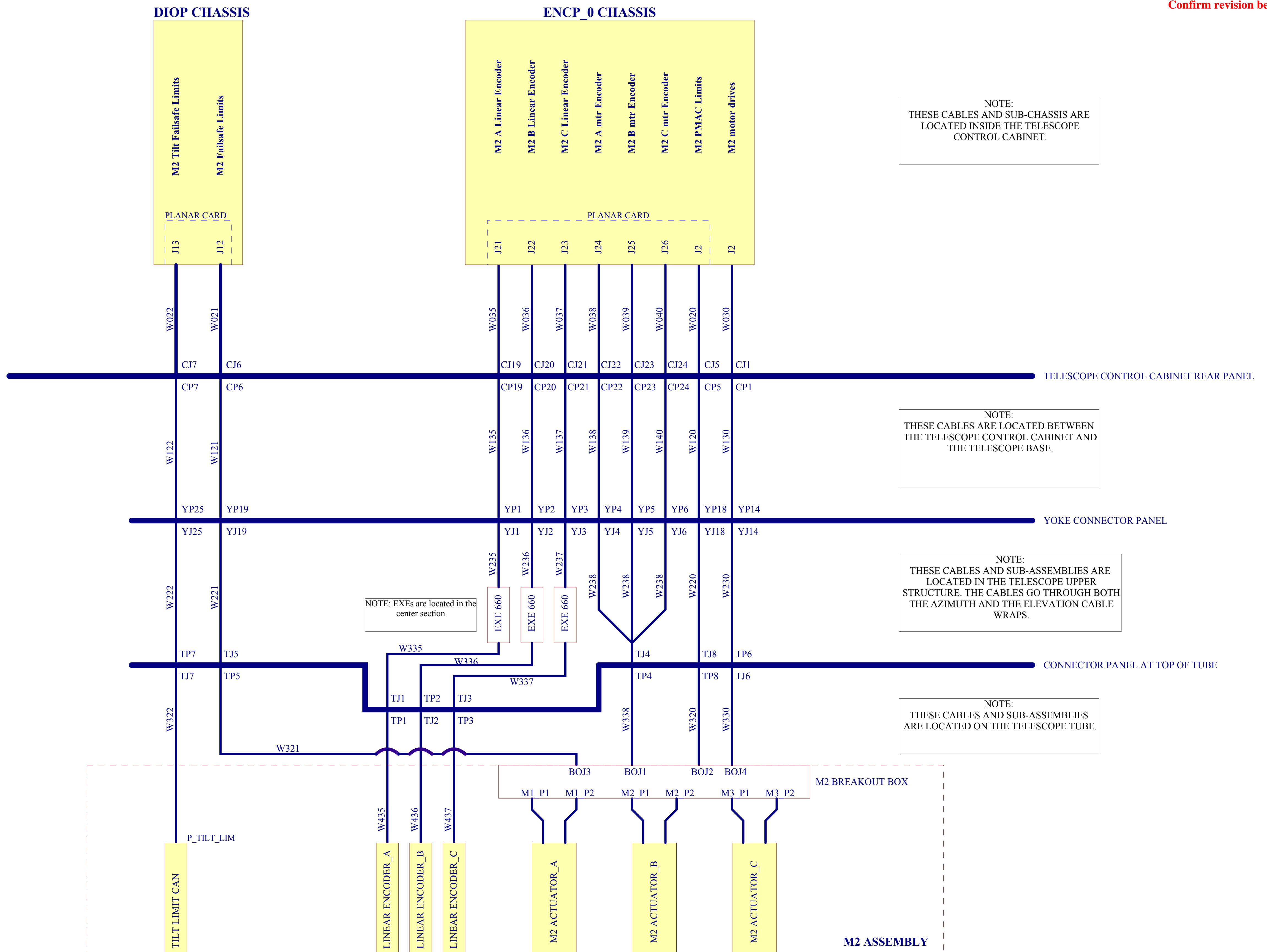
A3

EastConfig

SCH-5376-2

SHEET 24

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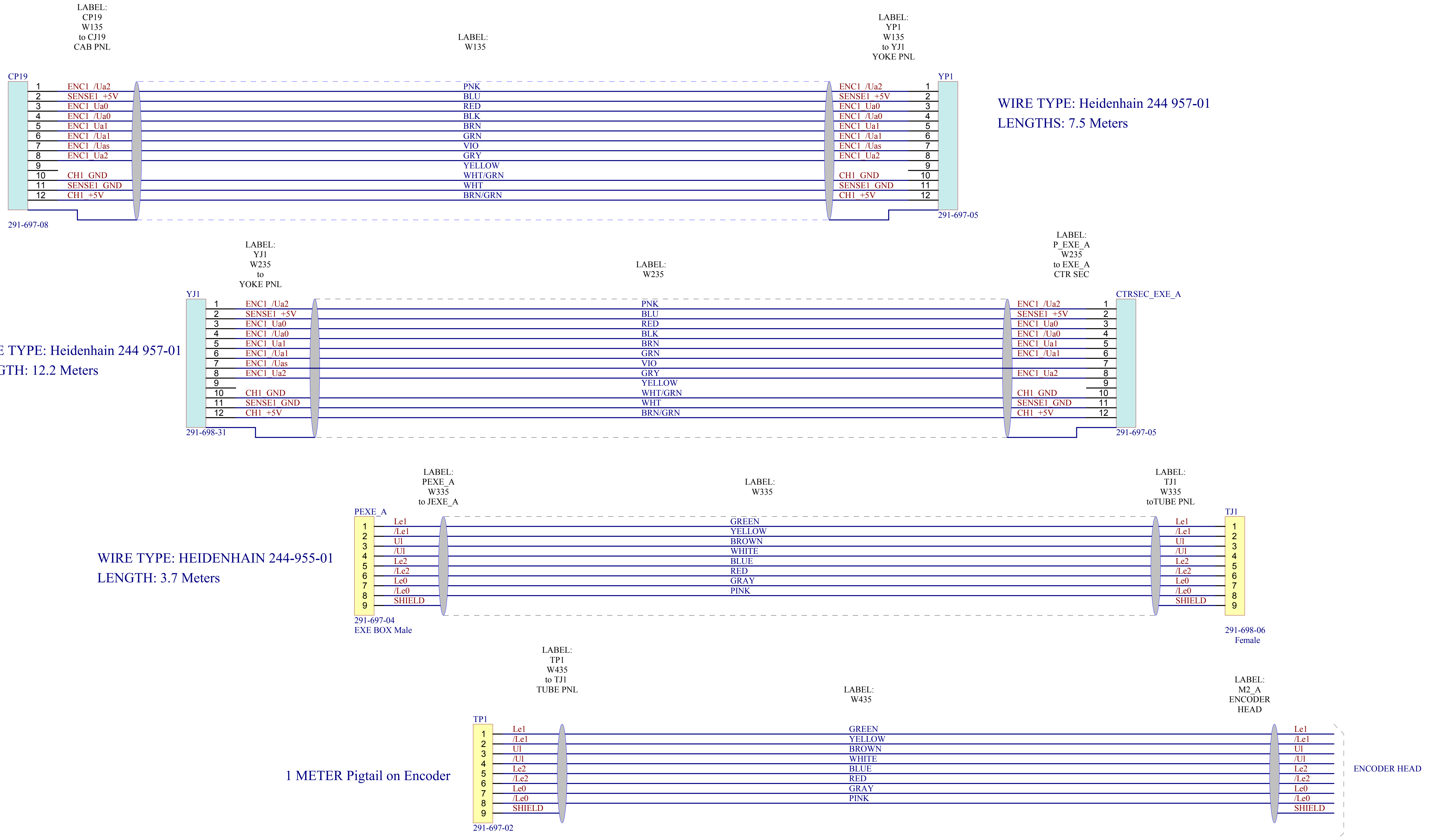
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EOS Technologies, Inc.
3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE
APF M2 Block Diagram

DOCUMENT NUMBER	SIZE
SCH-5389-2	A3
EastConfig SCH-5376-2	SHEET 26 OF 47

SECONDARY A ENCODER INPUTS



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PRINTED 12/8/2009 4:00:14 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF M2_A Linear Encoder

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

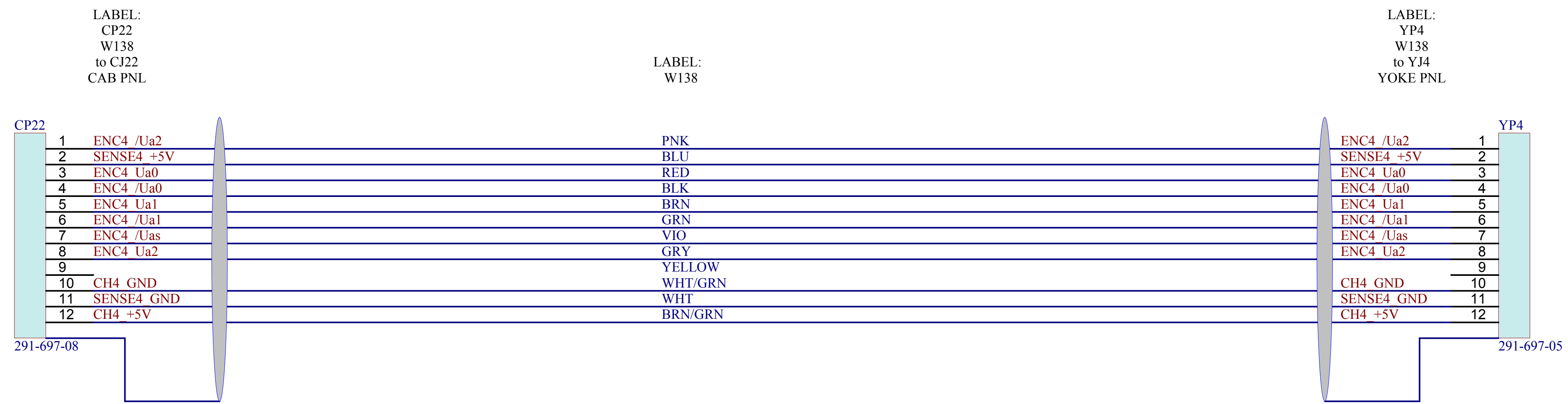
EastConfig

SCH-5376-2

SHEET 27

OF 47

SECONDARY A MOTOR ENCODER INPUTS



WIRE TYPE: Heidenhain 244 957-01
 LENGTHS: 7.5 Meters

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2amtrend\W138.SCHDOC
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 TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
 TUCSON, ARIZONA 85706 USA

TITLE

APF M2_A Motor Encoder

DOCUMENT NUMBER

SCH-5389-2

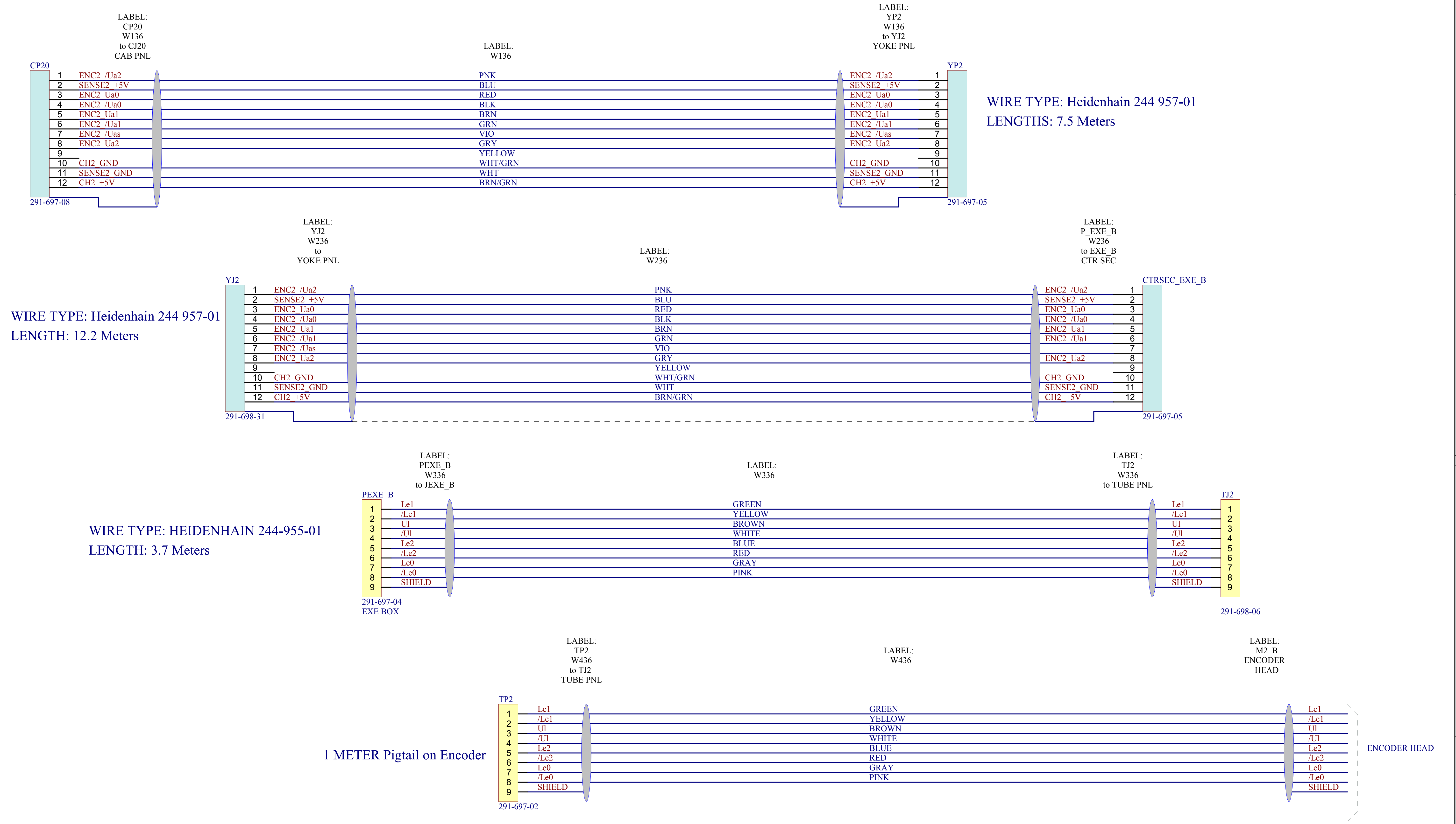
SIZE

A3

EastConfig SCH-5376-2

SHEET 28 OF 47

SECONDARY B ENCODER INPUTS



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2blnearW136.SCHDOC
PRINTED 12/8/2009 4:00:18 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

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TUCSON, ARIZONA 85706 USA

TITLE

APF M2_B Linear Encoder

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

SCH-5376-2

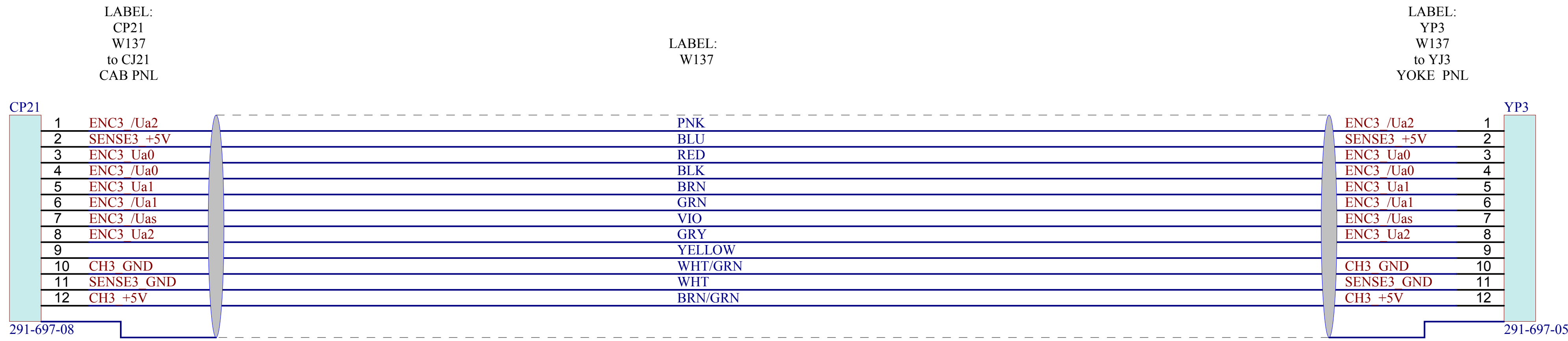
SHEET 29

OF 47

APF M2_B Linear Encoder

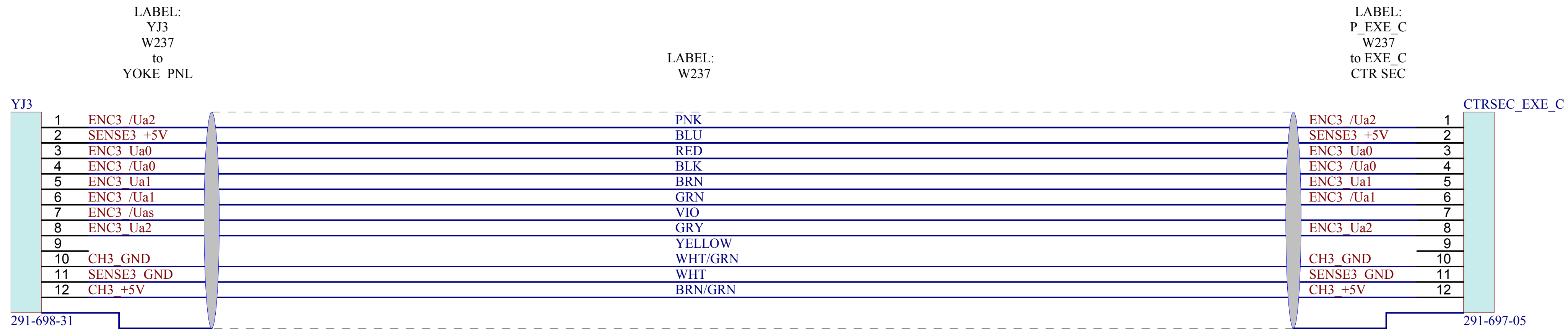
SCH-5389-2

SECONDARY C ENCODER INPUTS

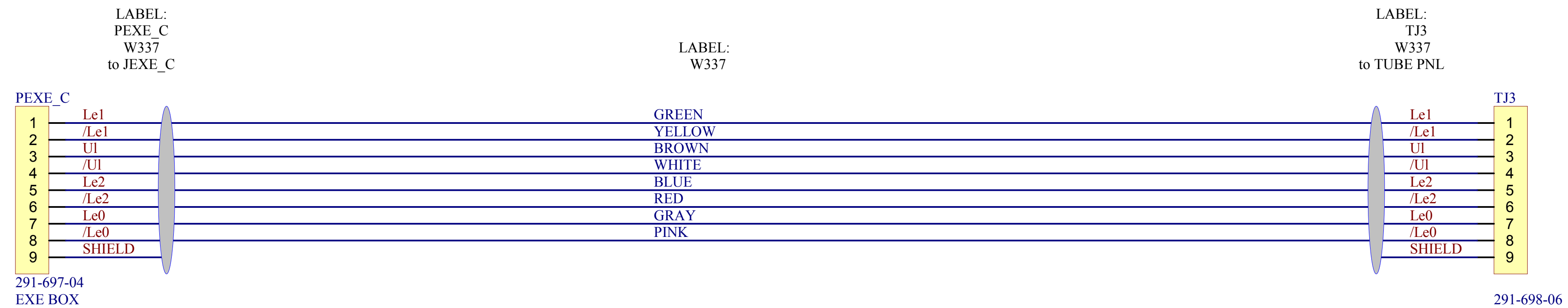


WIRE TYPE: Heidenhain 244 957-01
LENGTHS: 7.5 Meters

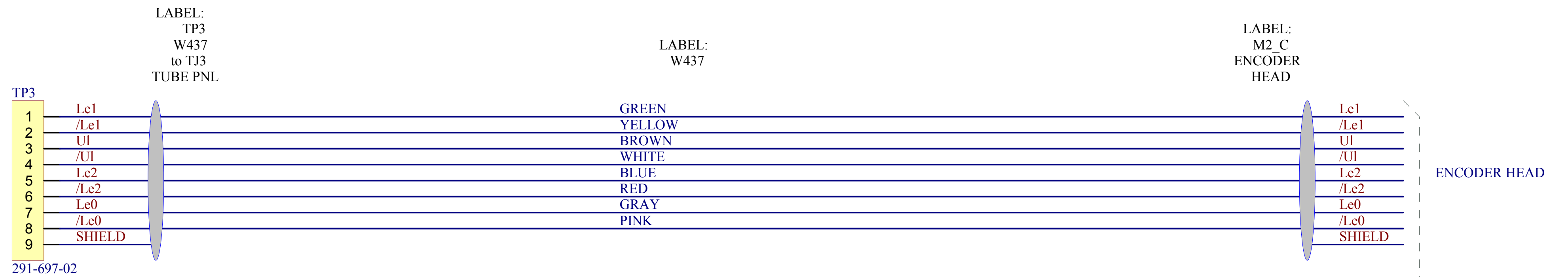
WIRE TYPE: Heidenhain 244 957-01
LENGTH: 12.2 Meters



WIRE TYPE: HEIDENHAIN 244-955-01
LENGTH: 3.7 Meters



1 METER Pigtail on Encoder



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2linearW137.SCHDOC
PRINTED 12/8/2009 4:00:22 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF M2_C Linear encoder

DOCUMENT NUMBER

SCH-5389-2

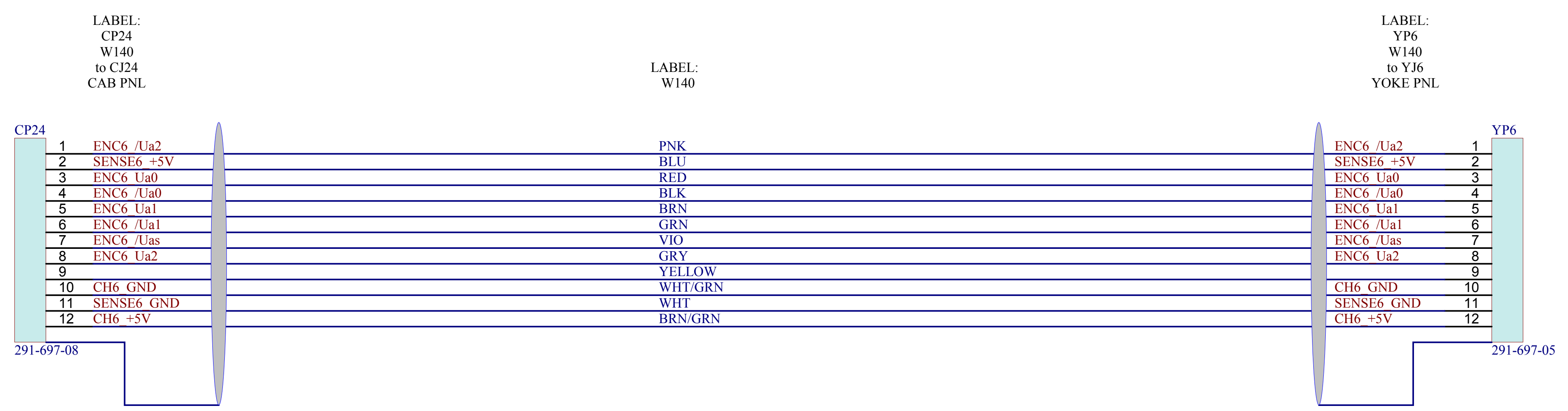
SIZE

A3

EastConfig SCH-5376-2

SHEET 31 OF 47

SECONDARY C MOTOR ENCODER INPUTS



WIRE TYPE: Heidenhain 244 957-01
LENGTHS: 7.5 Meters

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2cmtrncW140.SCHDOC
PRINTED 12/8/2009 4:00:24 PM
TEMPLATE: Eost_tabloid_SUBS

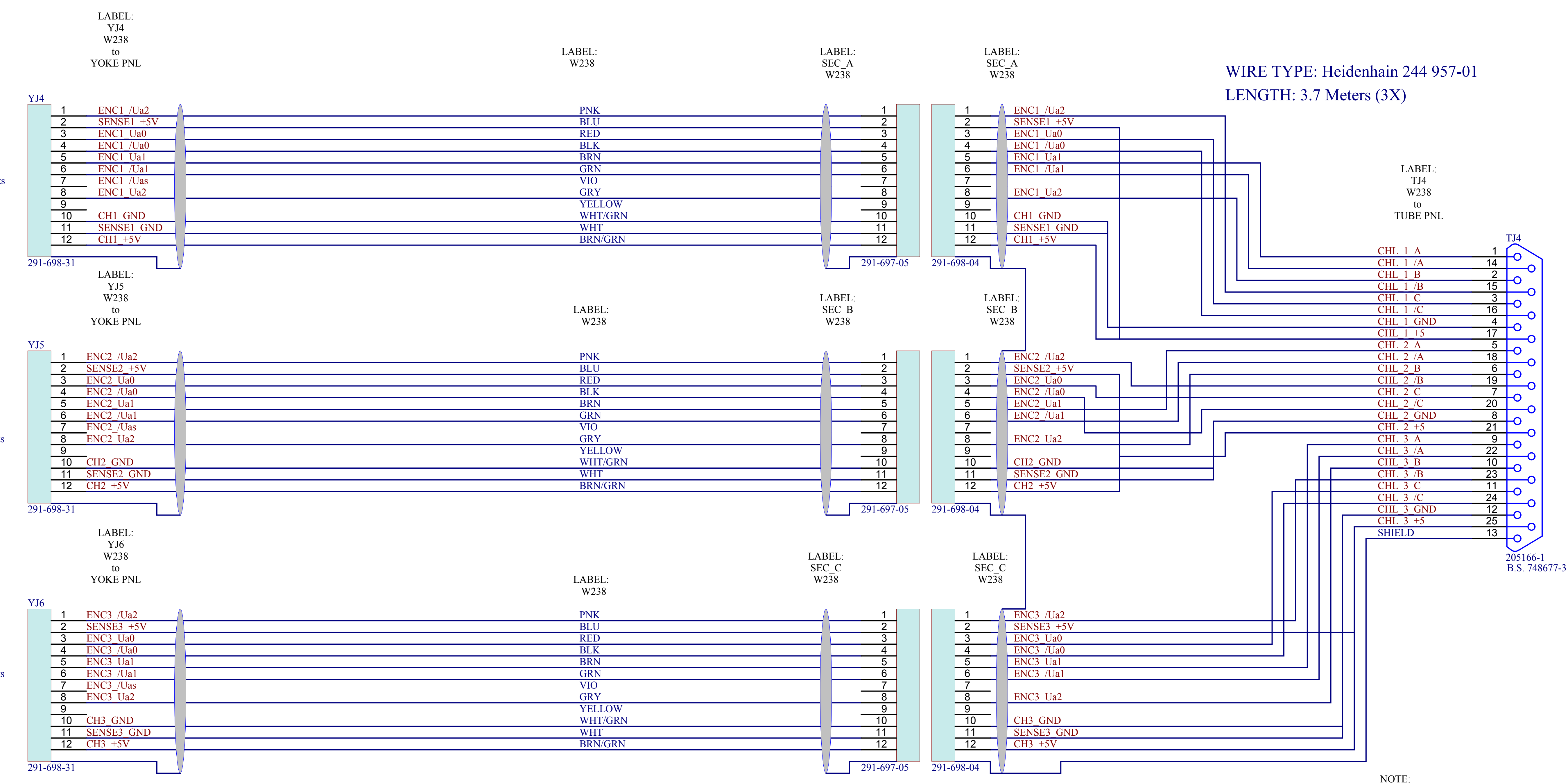
EOS Technologies, Inc.
3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE APF M2_C Motor Encoder	
DOCUMENT NUMBER SCH-5389-2	SIZE A3
EastConfig SCH-5376-2	SHEET 32 OF 47

APF M2_C Motor Encoder
SCH-5389-2

COMBINED SECONDARY MOTOR ENCODER INPUTS

WIRE TYPE: Heidenhain 244 957-01
LENGTH: 3.7 Meters (3X)



Note: Secondary A encoder inputs

Note: Secondary B encoder inputs

Note: Secondary C encoder inputs

NOTE:
Connect "Sense" wires to power and ground wires in the backshell of "TJ4" connector.

WIRE TYPE: Heidenhain 244 957-01
LENGTH: 12.2 Meters (3X)

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2combined\w238.SCHDOC
PRINTED 12/8/2009 4:00:26 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE
APF M2 Combined Linear Encoder

DOCUMENT NUMBER	SIZE
SCH-5389-2	A3
EastConfig SCH-5376-2	SHEET 33 OF 47

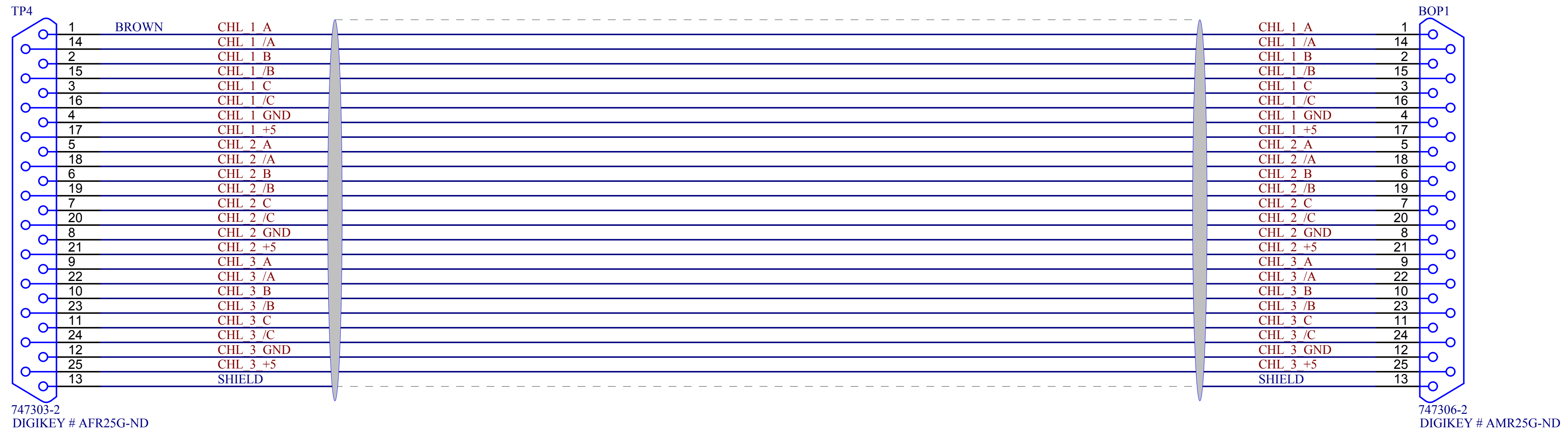
SCH-5389-2 APF M2 Combined Linear Encoder

COMBINED SECONDARY MOTOR ENCODER INPUTS

LABEL:
TP4
W338
to TJ4
TUBE PNL

LABEL:
W338

LABEL:
BOP1
W338
to
BOJ1_M2



WIRE TYPE: 25 CONDUCTOR SHIELDED RIBBON CABLE
LENGTH: 2 Meters

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2comblnearW338.SCHDOC
PRINTED 12/8/2009 4:00:28 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF M2 Combined Linear Encoder

DOCUMENT NUMBER

SCH-5389-2

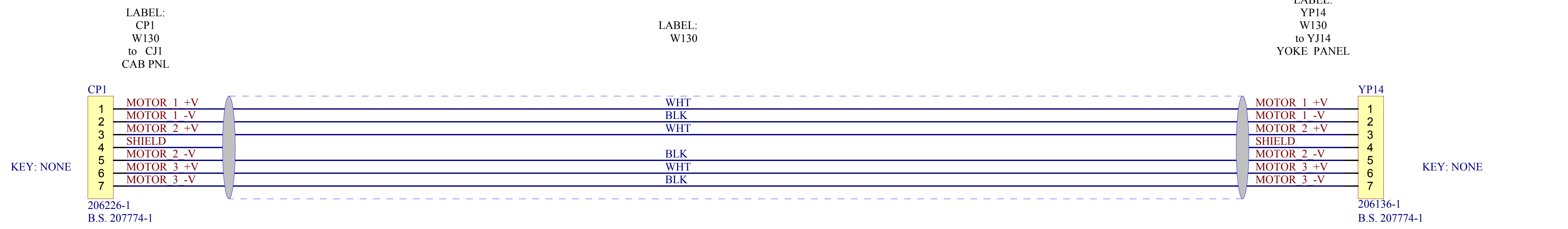
SIZE

A3

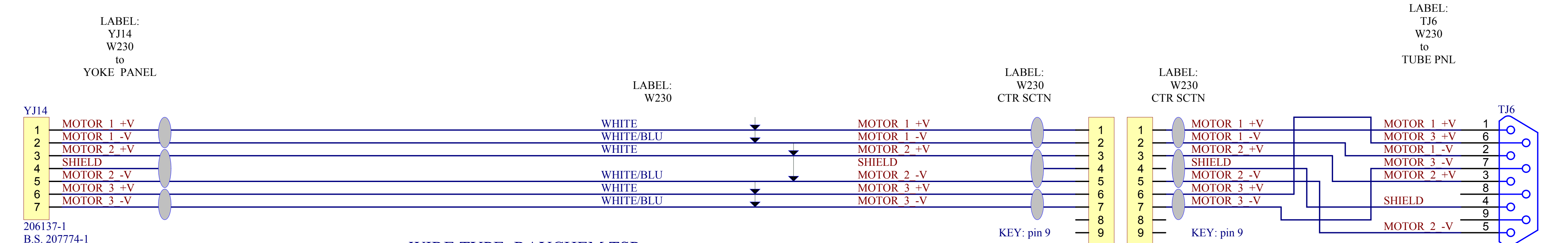
EastConfig SCH-5376-2

SHEET 34 OF 47

SECONDARY MOTOR DRIVE

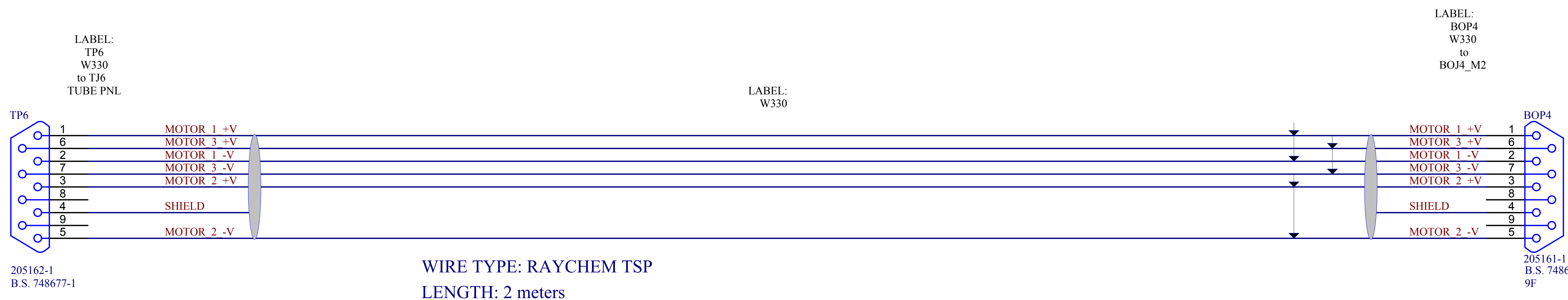


WIRE TYPE: A.E.PETSCHKE PVAZBD6298
 LENGTHS: 7.5 Meters



WIRE TYPE: RAYCHEM TSP
 LENGTH: 12.5 Meters

WIRE TYPE: RAYCHEM TSP
 LENGTH: 3.7 Meters



WIRE TYPE: RAYCHEM TSP
 LENGTH: 2 meters

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2drnW130.SCHDOC
 PRINTED 12/8/2009 4:00:30 PM
 TEMPLATE: Eost_tabloid_SUBS

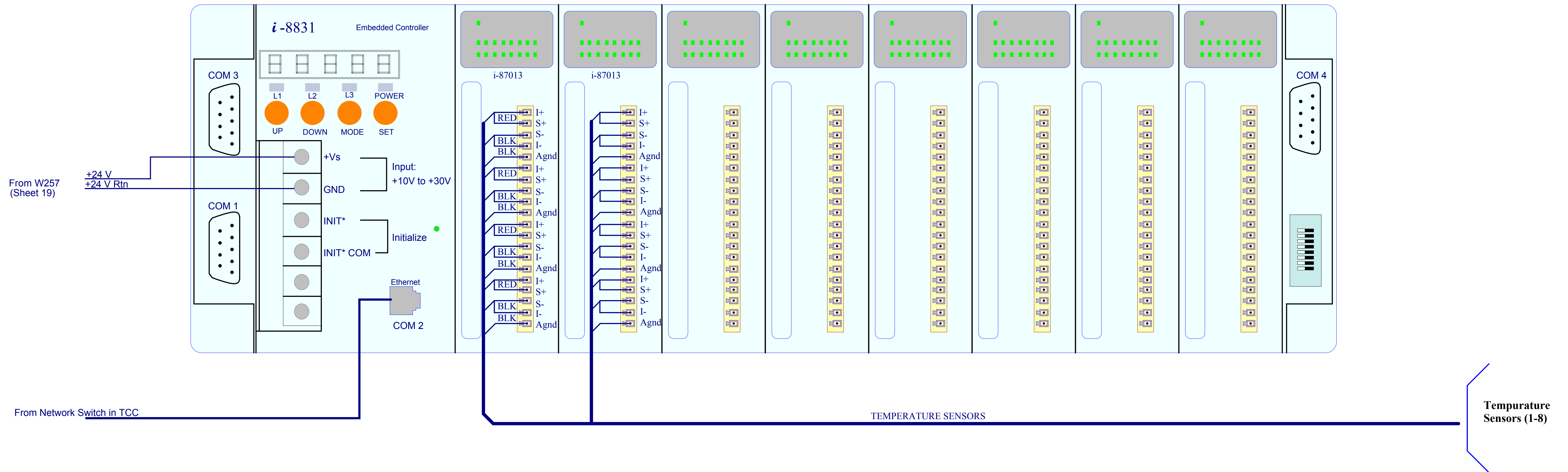
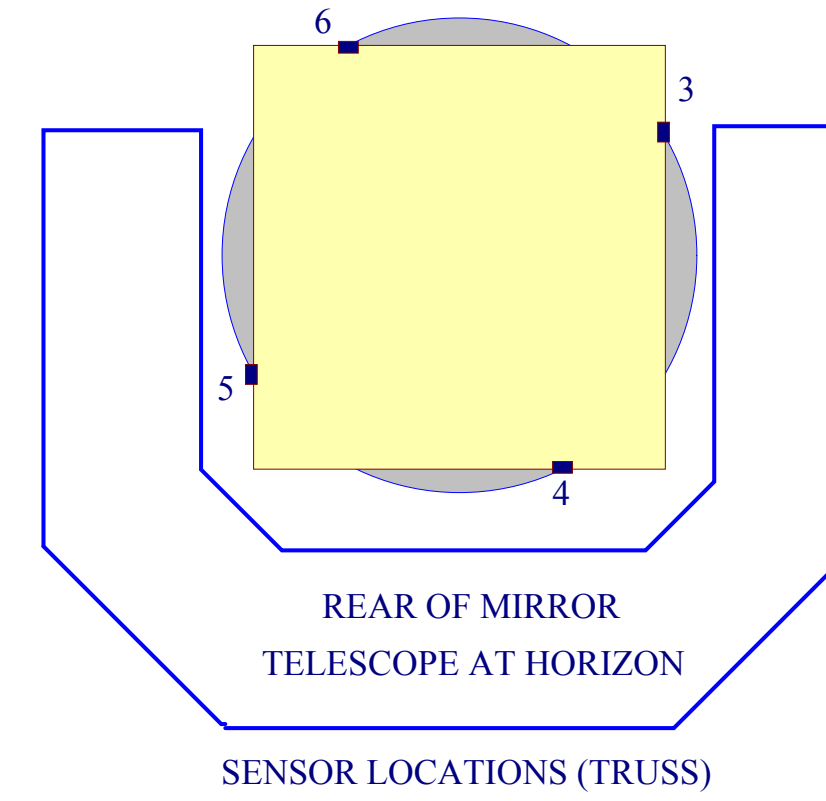
EOS Technologies, Inc.
 3160 E. TRANSCON WAY, Suite 180
 TUCSON, ARIZONA 85706 USA

TITLE
APF M2 Motor Drive

DOCUMENT NUMBER	SCH-5389-2	SIZE	A3
EastConfig	SCH-5376-2	SHEET	35 OF 47

APF M2 Motor Drive
 SCH-5389-2

ICP COM i-8831



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\APF_ICP COM module.SchDoc
PRINTED 12/8/2009 3:59:49 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

IPC Com Temperature Module

DOCUMENT NUMBER

SCH-5389-2

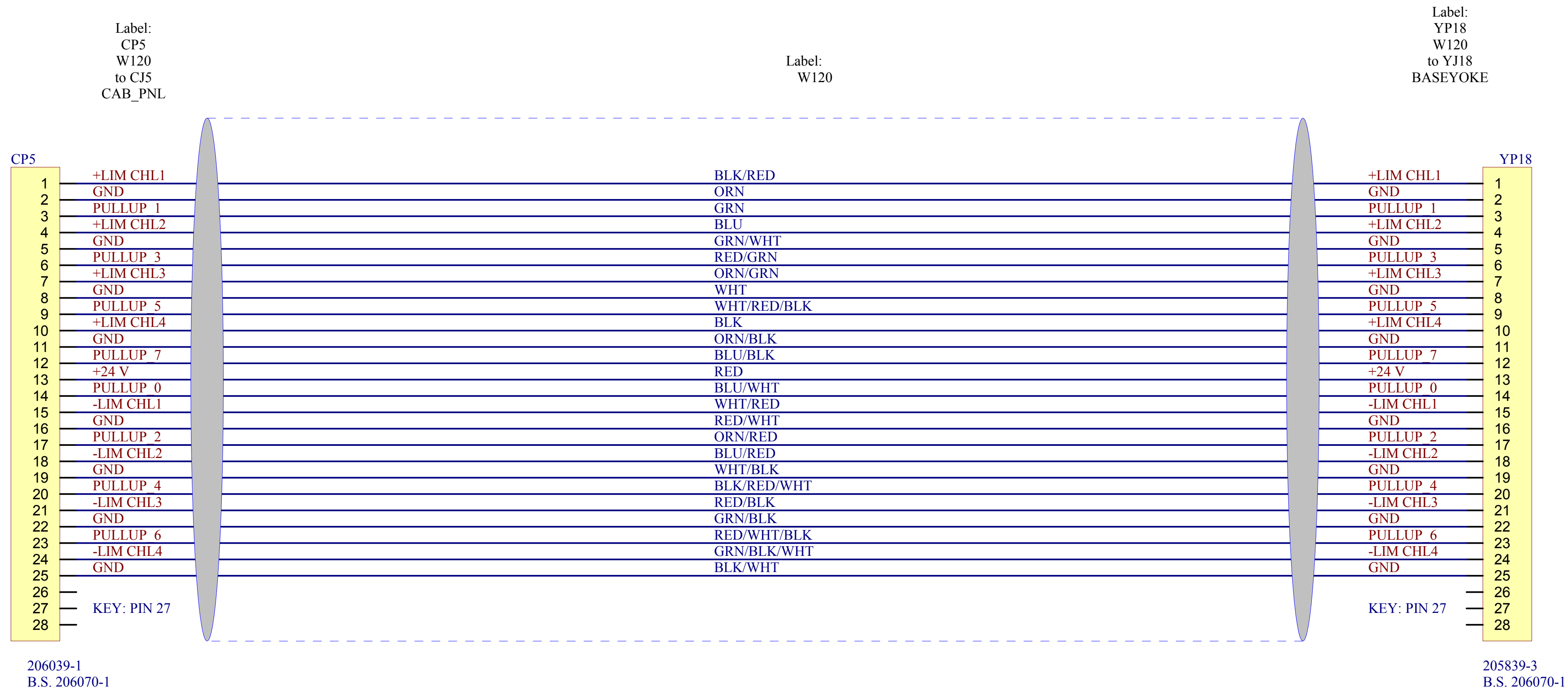
SIZE

A3

EastConfig SCH-5839-2

SHEET 36 OF 47

SECONDARY LIMIT INPUTS PMAC LIMIT INPUTS [1..4]



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\pmaclim14W120.SCHDOC
 PRINTED 12/8/2009 4:00:42 PM
 TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF M2 EOT Limits

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

SCH-5376-2

SHEET 37

OF 47

SECONDARY LIMIT INPUTS PMAC LIMIT INPUTS [1..4]

Label:
YJ18
W220
to
YOKE PNL

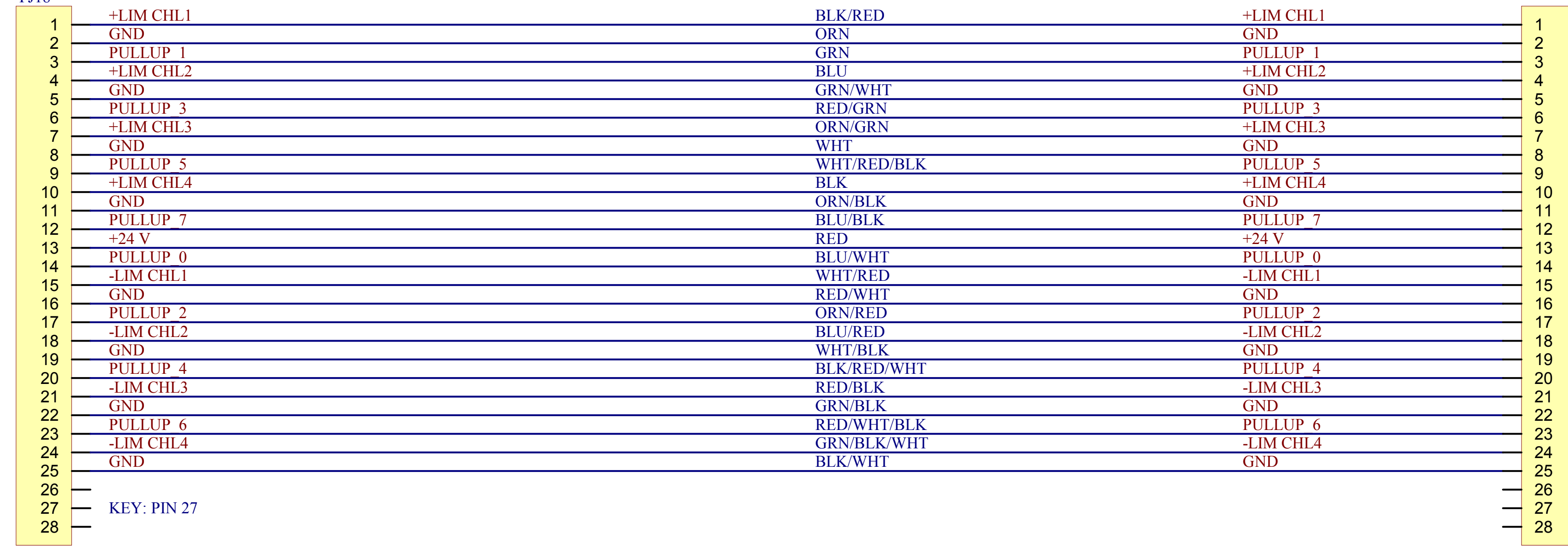
Label:
W220

Label:
W220
CTR SCTN

Label:
W220
CTR SCTN

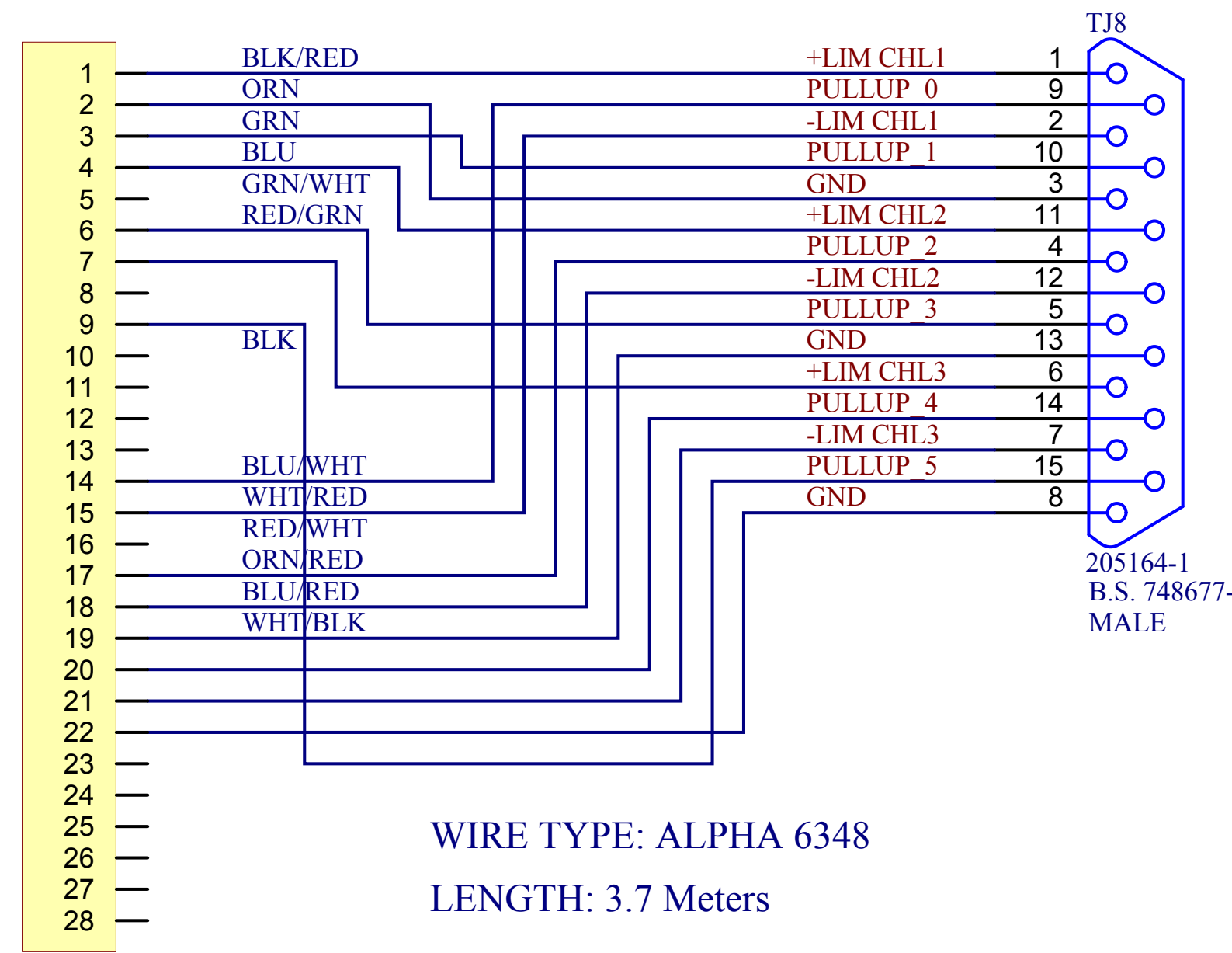
Label:
TJ8
W220
to
TUBE_PNL

YJ18



205840-3
B.S. 206070-1

WIRE TYPE: ALPHA 6348
LENGTH: 12.35 Meters



206038-2
B.S. 206070-1

206039-1
B.S. 206070-1

WIRE TYPE: ALPHA 6348
LENGTH: 3.7 Meters

205164-1
B.S. 748677-2
MALE

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\pmaclim14W220.SCHDOC
PRINTED 12/8/2009 4:00:44 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.
3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE	
APF M2 EOT Limits	
DOCUMENT NUMBER	SIZE
SCH-5389-2	A3
EastConfig	SCH-5376-2
SHEET 38	OF 47

APF M2 EOT Limits

SCH-5389-2

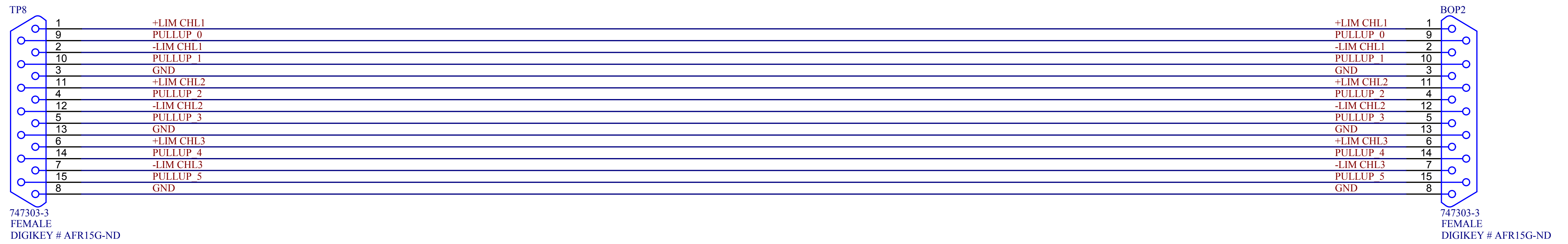
SECONDARY LIMIT INPUTS

PMAC LIMIT INPUTS [1..4]

Label:
TP8
W320
to TJ8
TUBE PNL

Label:
W320

Label:
BOP2
W320
to
BOJ2_M2



WIRE TYPE: 15 CONDUCTOR RIBBON
LENGTH: 2 Meters

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\pmacim14W320.SCHDOC
PRINTED 12/8/2009 4:00:46 PM
TEMPLATE: Eost_tabloid_SUBS

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3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF M2 EOT Limits

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

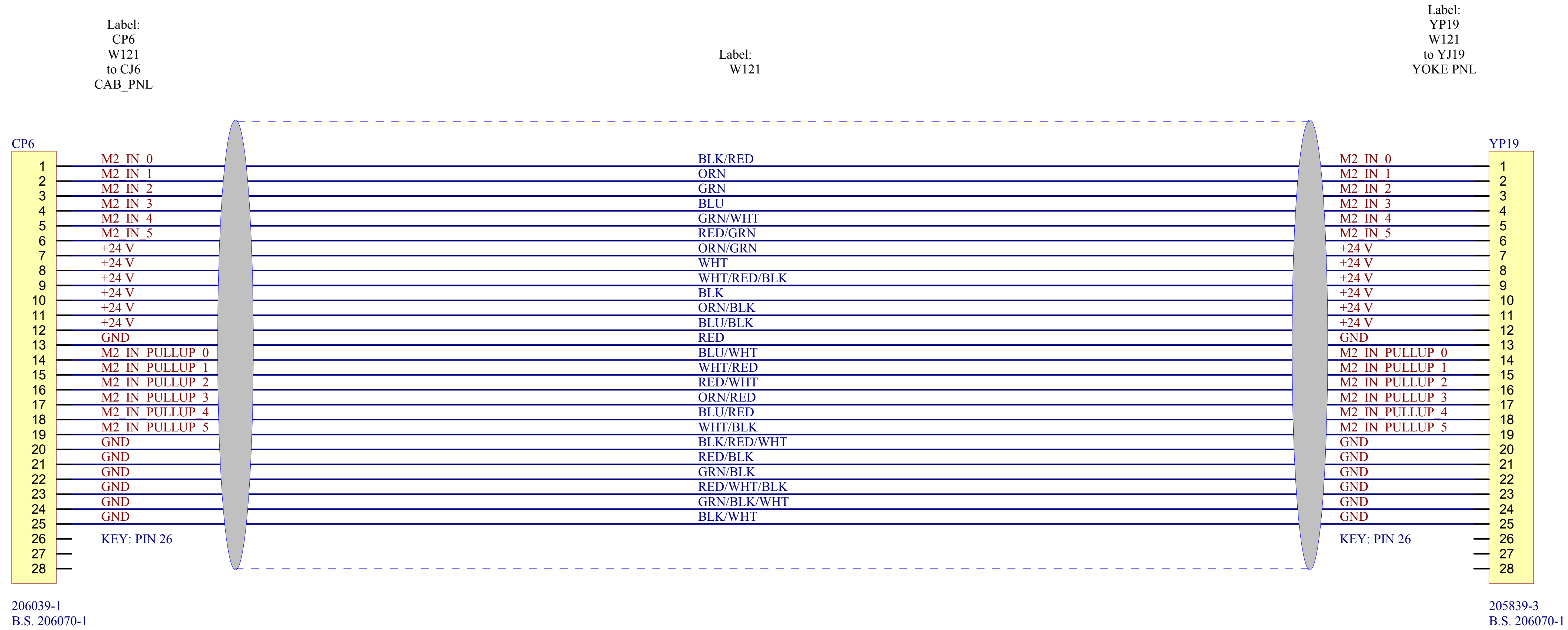
EastConfig

SCH-5376-2

SHEET 39

OF 47

M2 FAILSAFE I/O



WIRE TYPE: ALPHA 6348
LENGTHS: 7.5 Meters

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2fs\W121.SCHDOC
PRINTED 12/8/2009 4:00:32 PM
TEMPLATE: Eost_tabloid_SUBS

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TITLE

APF M2 Failsafe

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

SCH-5376-2

SHEET 40

OF 47

M2 FAILSAFE I/O

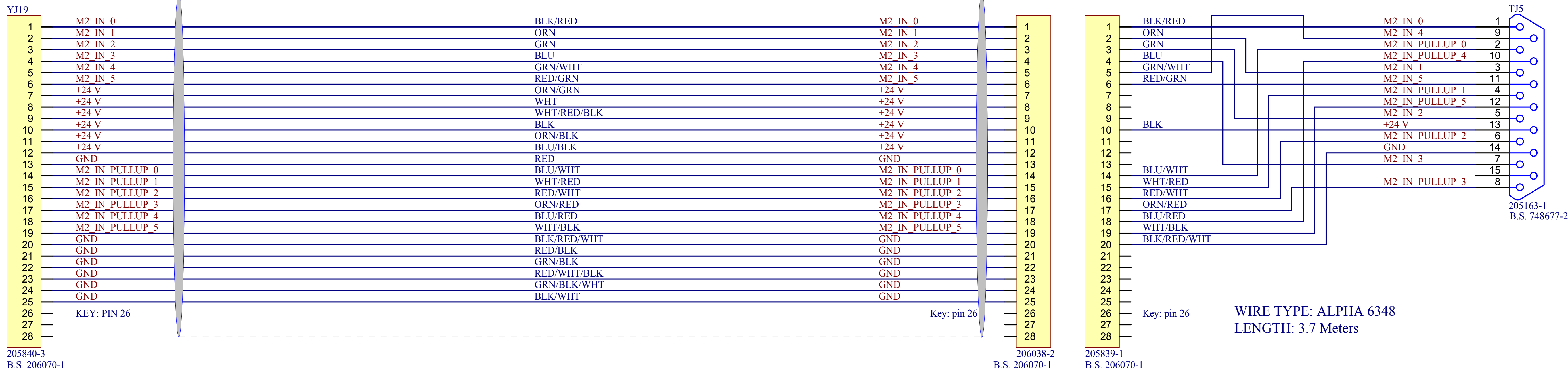
Label:
YJ19
W221
to
YOKE PNL

Label:
W221

Label:
W221
CTR SCTN

Label:
W221
CTR SCTN

Label:
TJ5
W221
to
TUBE PNL



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2fsW221.SCHDOC
PRINTED 12/8/2009 4:00:33 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF M2 Failsafe

DOCUMENT NUMBER

SCH-5389-2

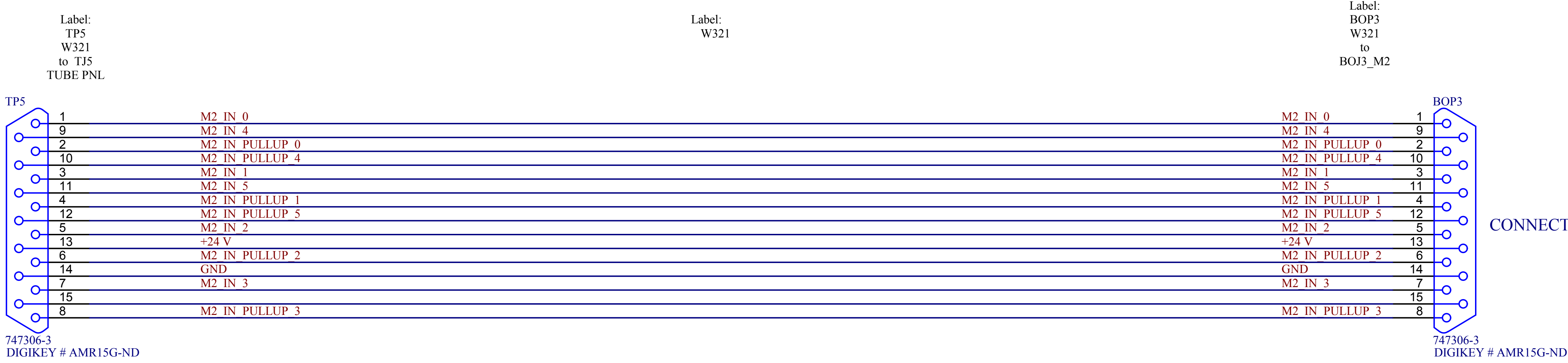
SIZE

A3

EastConfig SCH-5376-2

SHEET 41 OF 47

M2 FAILSAFE I/O



WIRE TYPE: 15 CONDUCTOR RIBBON CABLE
LENGTH: 2.5M

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2fsW321.SCHDOC
PRINTED 12/8/2009 4:00:34 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.
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TITLE
M2 Failsafe I/O

DOCUMENT NUMBER
SCH-5389-2

SIZE
A3

EostConfig SCH-5376-2 SHEET 42 OF 47

M2 Failsafe I/O

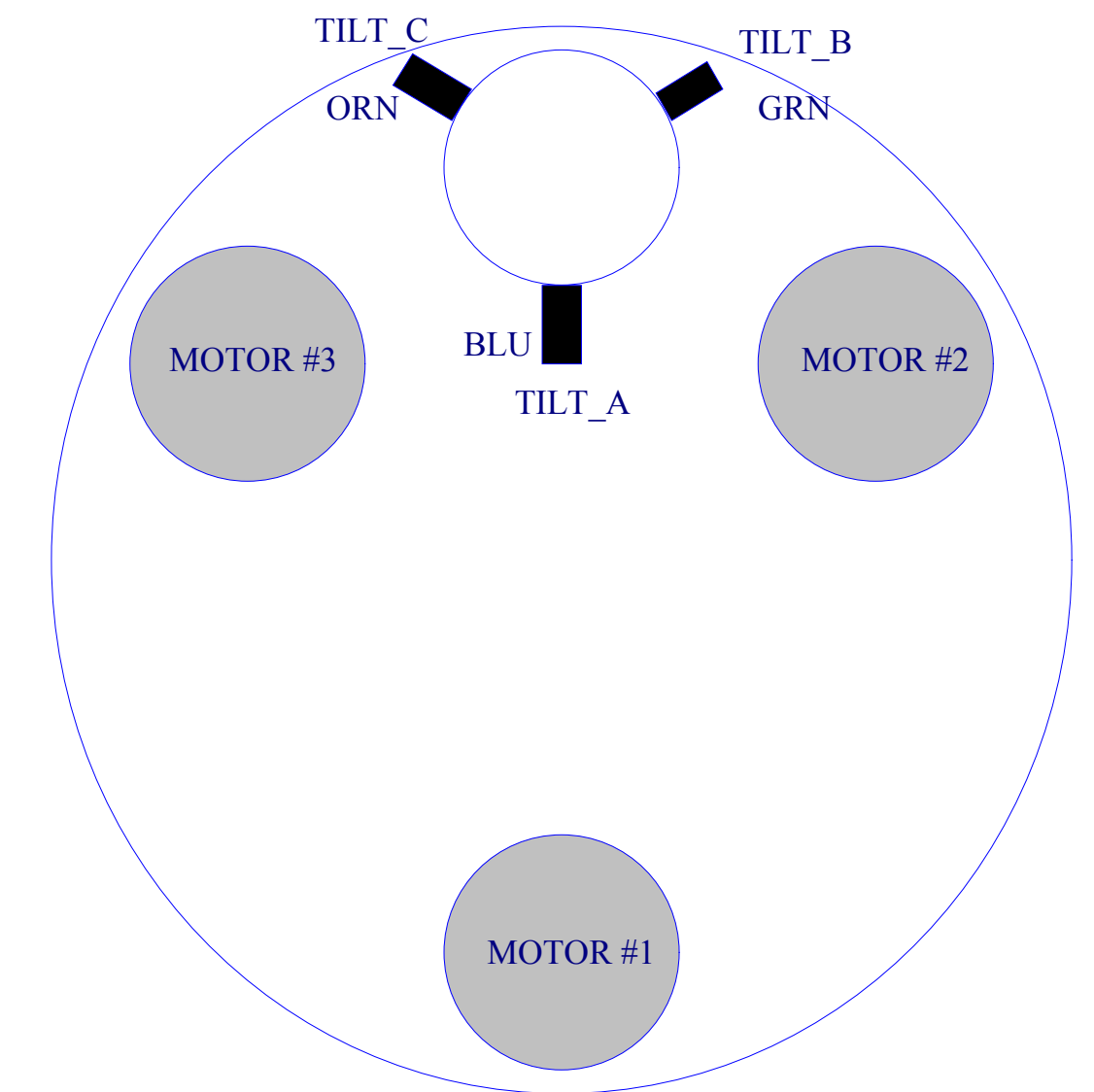
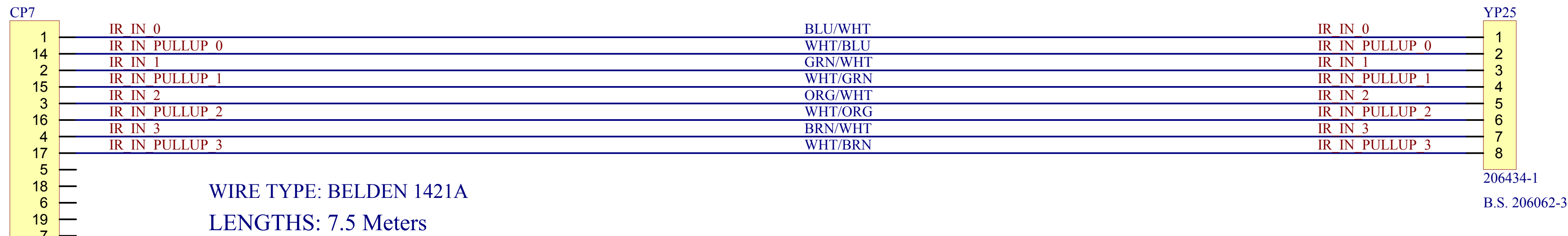
SCH-5389-2

M2 TILT F.S.

Label:
CP7
W122
to CJ7
CAB_PNL

Label:
W122

Label:
YP25
W122
to YJ25
YOKE PNL



VIEW FROM MIRROR END OF M2

KEY: PIN 13

KEY: PIN 13

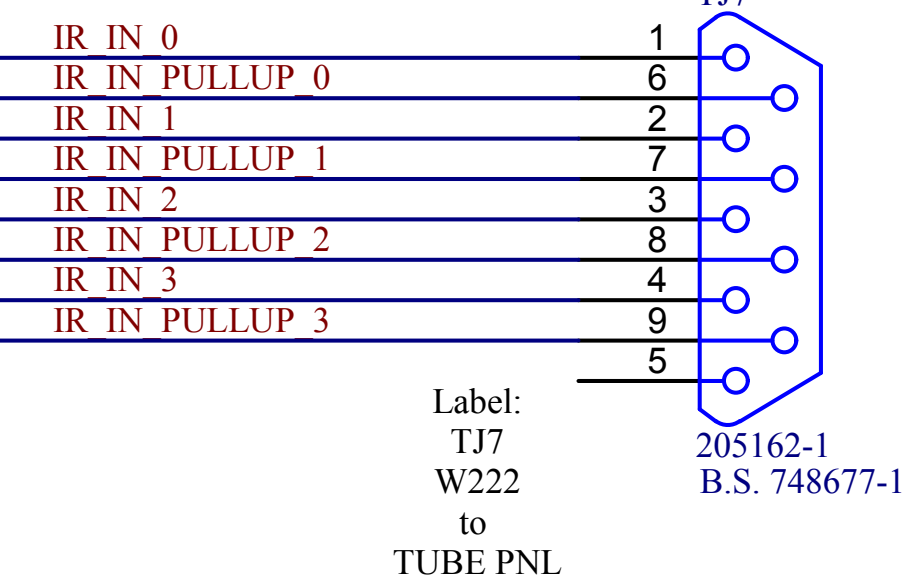
Label:
YJ25
W222
to
YOKE PNL

Label:
W222

206039-1
B.S. 206070-1

YJ25
1 IR IN 0
2 IR IN PULLUP 0
3 IR IN 1
4 IR IN PULLUP 1
5 IR IN 2
6 IR IN PULLUP 2
7 IR IN 3
8 IR IN PULLUP 3
206433-1
B.S. 206062-3

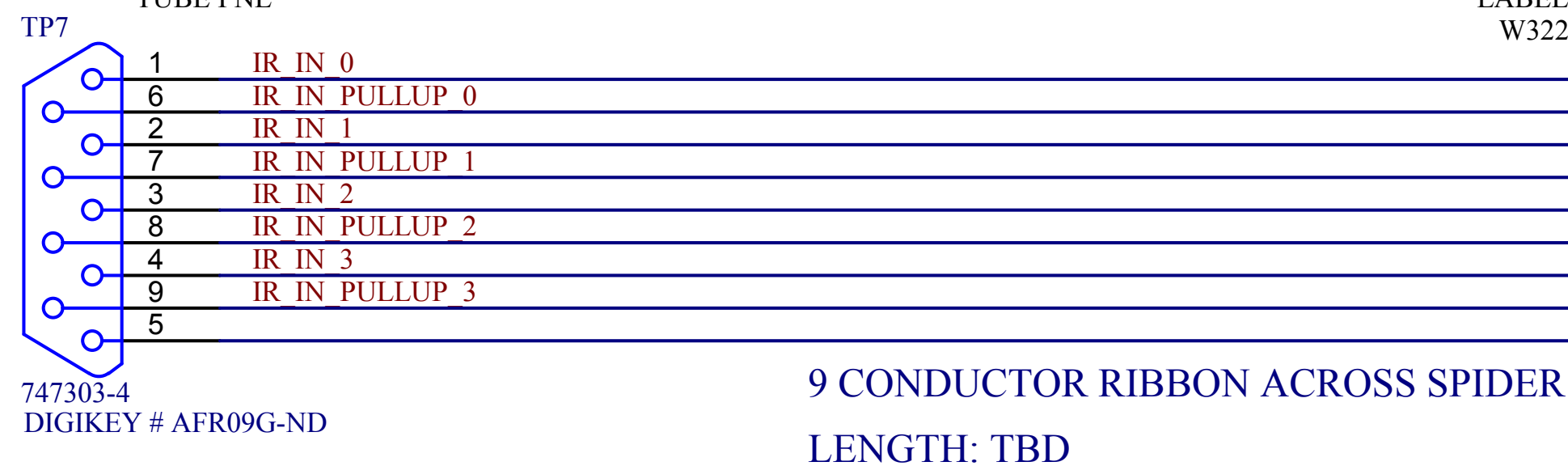
WIRE TYPE: BELDEN 1421A
LENGTH: TBD



LABEL:
TP7
W322
to
TJ7
TUBE PNL

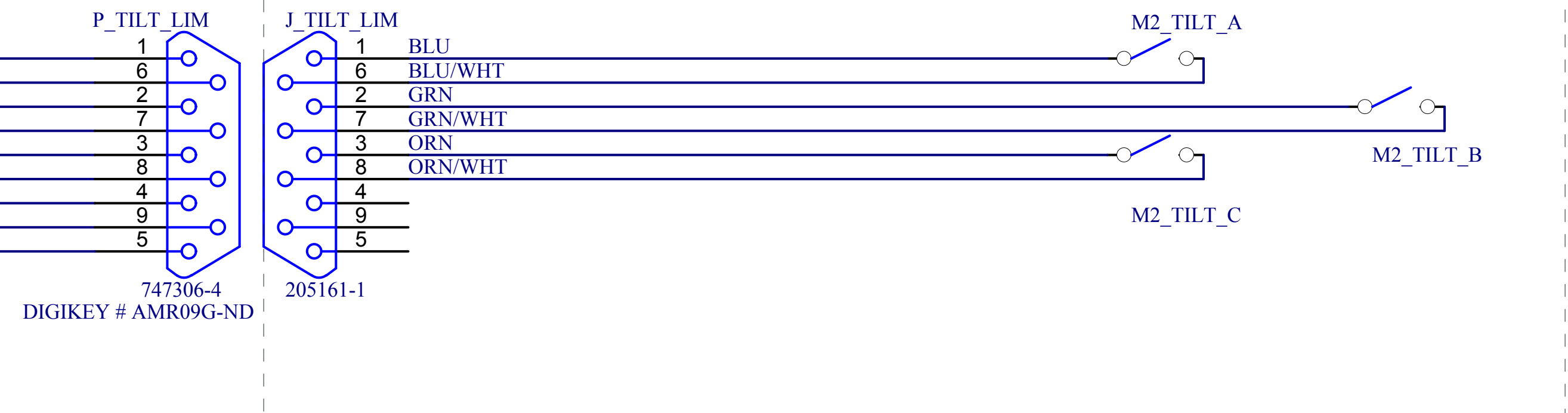
KEY: PIN 13

LABEL:
W322



LABEL:
P_TILT_LIM
W322
to
J_TILT_LIM
M2_UNIT

LIMIT SWITCH CAN



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\m2\tiltW122.SCHDOC
PRINTED 12/8/2009 4:00:35 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF M2 Failsafe Tilt Limits

DOCUMENT NUMBER

SCH-5389-2

SIZE

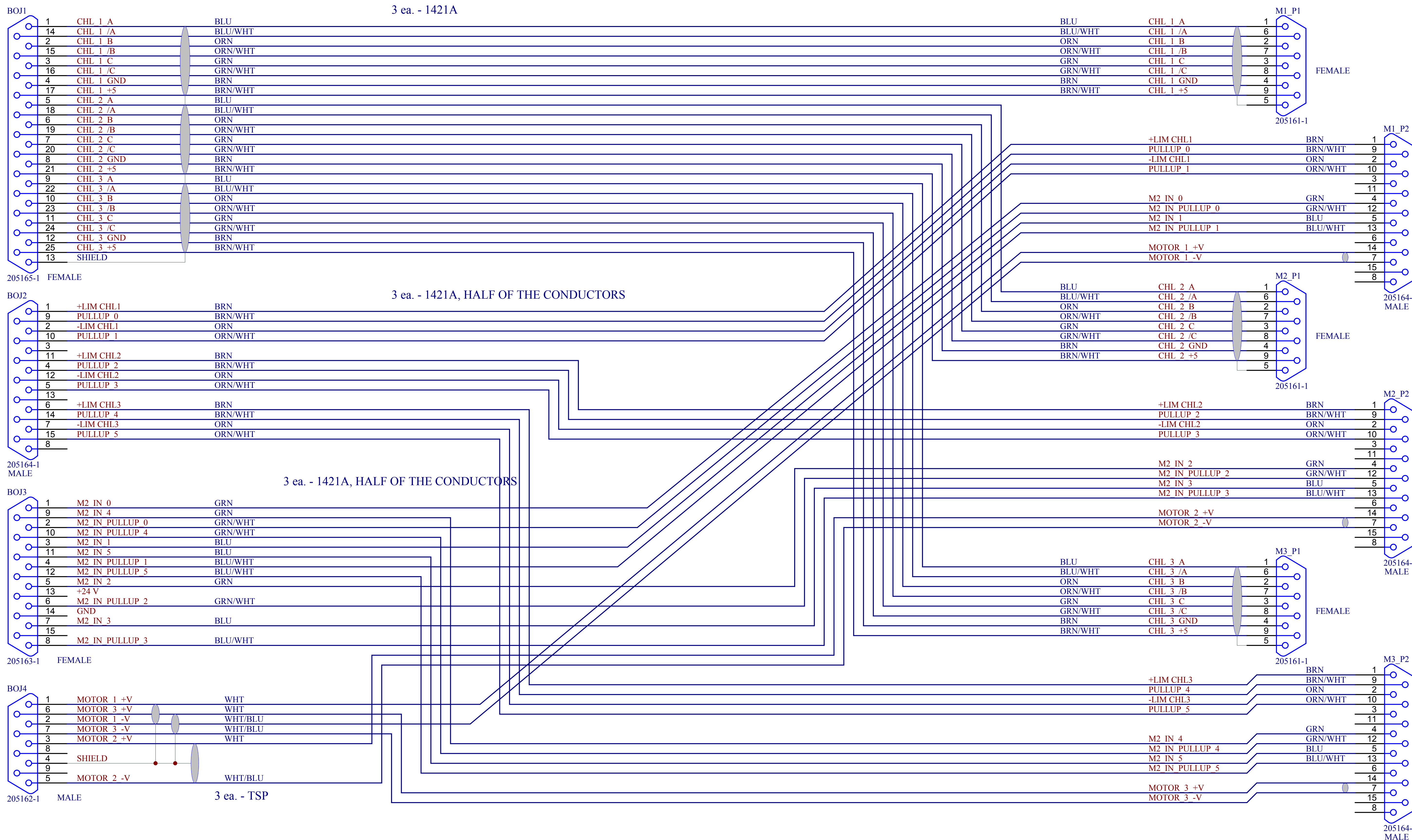
A3

EastConfig

SCH-5376-2

SHEET 43

OF 47



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\APF_M2_BRKOUT.SCHDOC
PRINTED 12/8/2009 3:59:51 PM
TEMPLATE: Eost_tabloid_SUBS

Controlled Document
Confirm revision before using

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TITLE

APF M2 Electrical Breakout

DOCUMENT NUMBER

SCH-5389-2

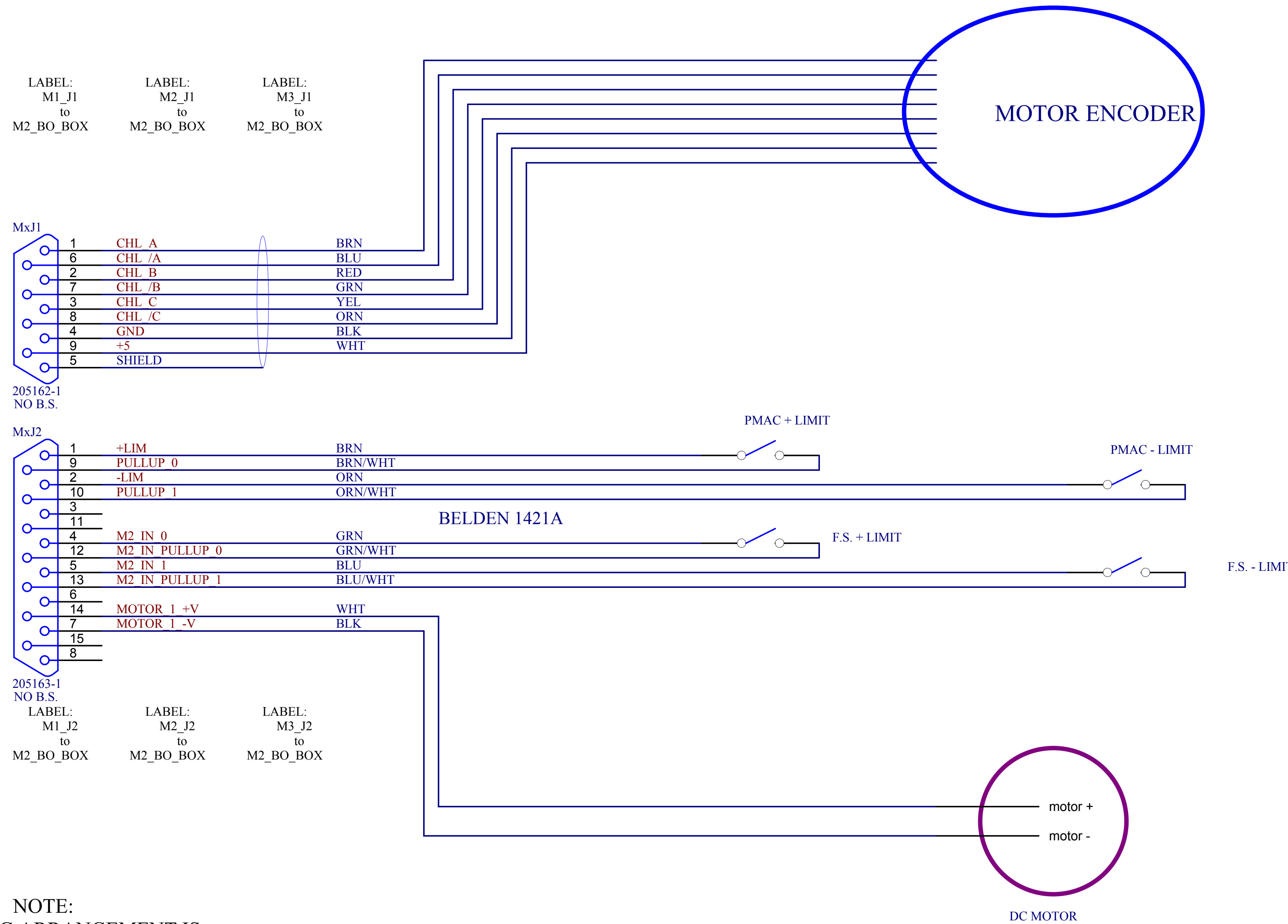
SIZE

A3

EastConfig SCH-5376-2

SHEET 44 OF 47

APF M2 Electrical Breakout
SCH-5389-2



NOTE:
THIS WIRING ARRANGEMENT IS
REPEATED FOR EACH M2
ACTUATOR

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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\APF M2_ACTUATOR.SCHDOC
PRINTED 12/8/2009 3:59:41 PM
TEMPLATE: Eost_tabloid_SUBS

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3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

APF M2 Actuator

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

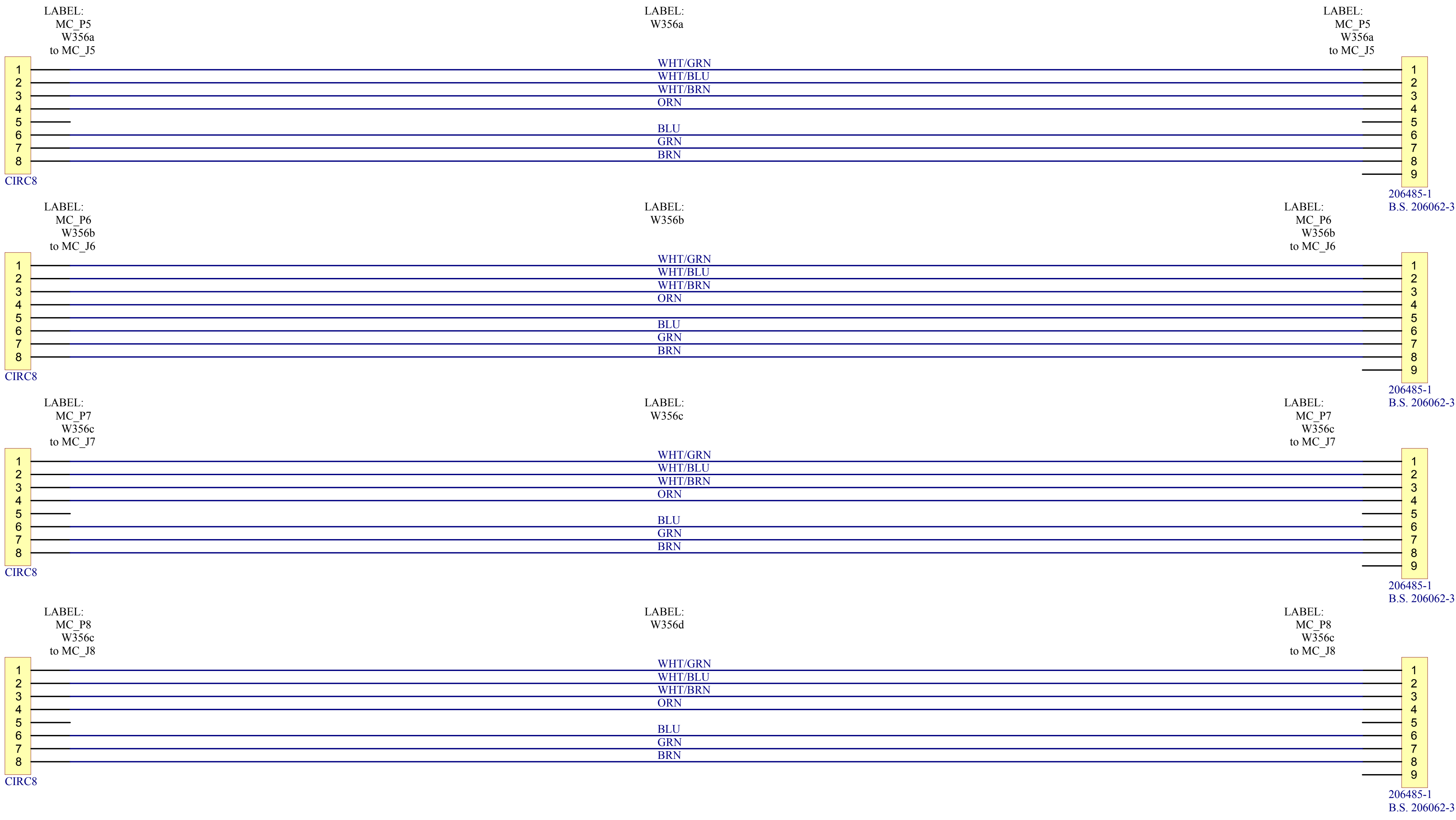
EastConfig

SCH-5376-2

SHEET 45

OF

47



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\apf_mc_actW356abcd.SCHDOC
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TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

Mirror Covers Control

DOCUMENT NUMBER

SCH-5389-2

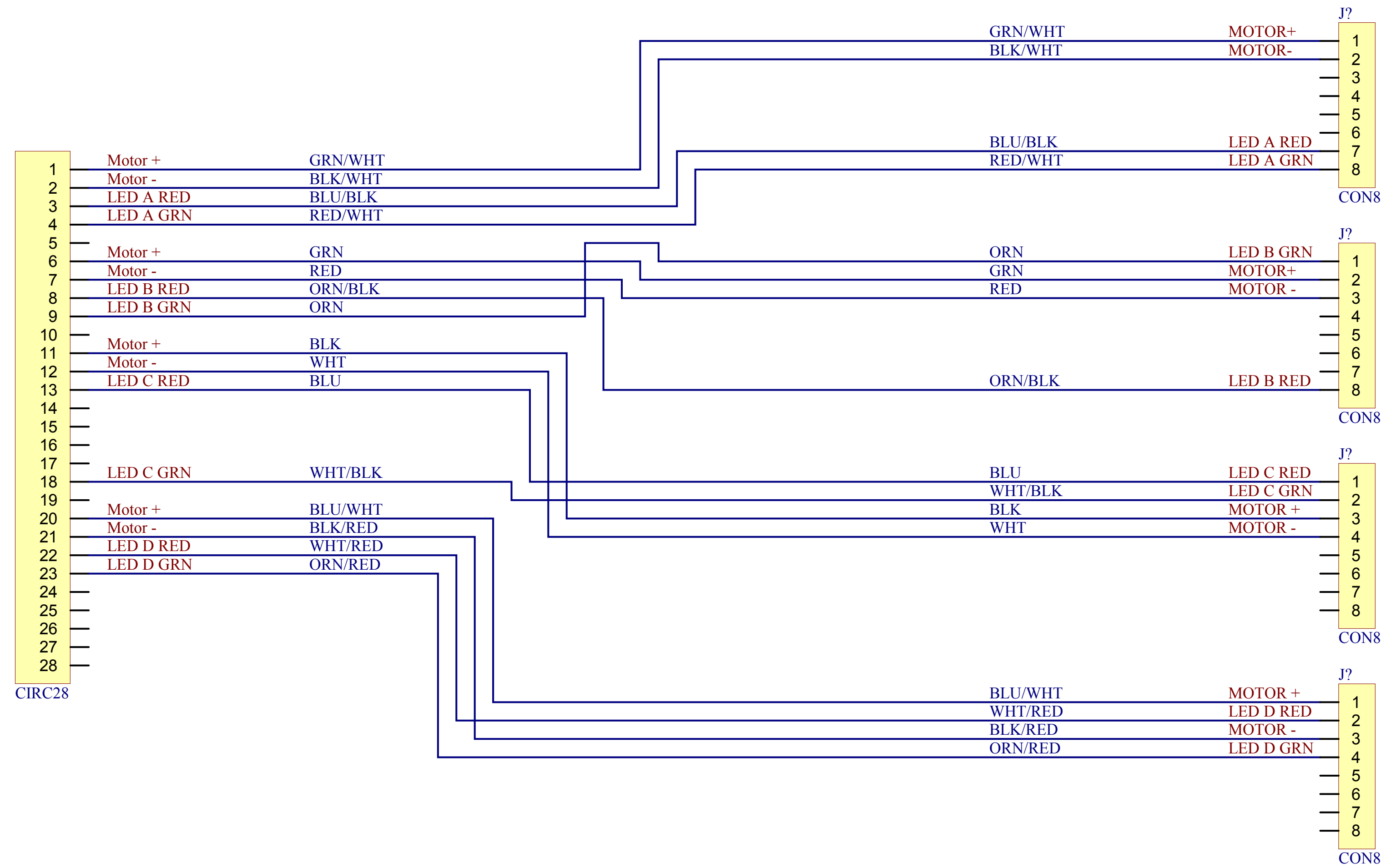
SIZE

A3

EastConfig SCH-5839-2

SHEET 46 OF 47

Mirror Cover Manual Control



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FILE C:\GGay\Lick Schematics\SCH-5389-2 APF Telescope Cables TEMP\APF_mc_manual_control.SCHDOC
PRINTED 12/8/2009 3:59:53 PM
TEMPLATE: Eost_tabloid_SUBS

EOS Technologies, Inc.

3160 E. TRANSCON WAY, Suite 180
TUCSON, ARIZONA 85706 USA

TITLE

Mirror Covers Manual Control

DOCUMENT NUMBER

SCH-5389-2

SIZE

A3

EastConfig

SCH-5389-2

SHEET 47

OF 47