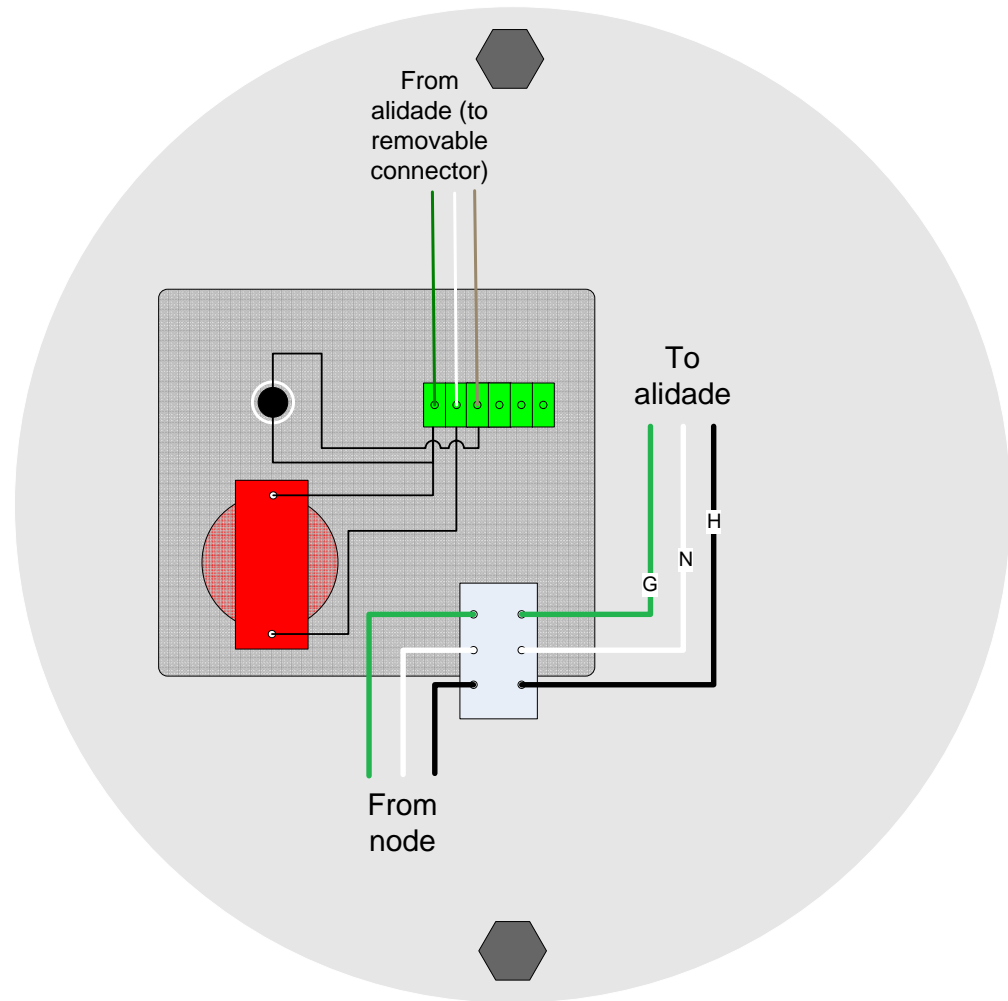
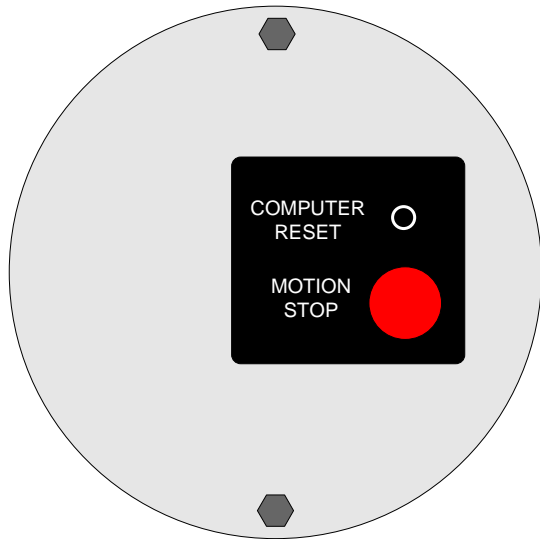


March 7, 2006
alidawireharness.xls
ATA42fiberDistribution.doc



Alidade wire harnessing Enclosure								
Reference ELMCOOverview.vsd								
7-Mar-06								
AWE1	Input power wires through pedestal							
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	120VAC		65 strand wire	white	#12		
	2	Return		Beldon 8527	black	#12		
	3	Ground		Beldon 8520	green	#14		
Ends	A	bare wire	screw terminal block behind pie-plate					
	B	39860-0103	Molex terminal on Alidade Relay Board					
AWE2	Transformer							
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	120VAC		These wires except Ground are all on the toroid, we provide connector	white	#14		
	2	Return			black	#14		
	3							
	4	100VAC			red	#14		
	5	Return			red	#14		
End	A	39860-0105	Molex connector on alidade relay card					
AWE3	Power to motors							
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	110VAC		Use standard power cord and chop off plug	black	#14		2 ft
	2	Return			white	#14		
	3	Ground			green	#14		
Ends	A	39860-0104	Molex connector on alidade relay board					
	B	IEC-320	right angle plug on drive box					
AWE4	Power for control box							
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	120VAC		Use standard power cord and chop off plug	white	#18		
	2	Return			black	#18		
	3	Ground			green	#18		
Ends	A	39860-0103	Molex connector on alidade relay board					
	B	IEC-320	right angle plug on control box (may not exist in rt angle?)					
AWE5	Power for rim power box (also called AR1)							
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	120VAC		wire	black	#14		
	2	Return			white	#14		
	3	Ground			green	#14		
Ends	A	39860-0103	Molex connector on alidade relay board					
	B	ParlBlade U Gnd	connector in rim power box					
AWE6	15-wire cable from alidade relay board to drive box							
	A	Description	B	Comment		Size		Length
Wires/pins	1	az brakes +24V	1	1&9 are controlled with the main drives transformer power				
	2	Ground	2					
	3	24V aux	3			all #24		23"
	4	Ground	4					
	5	drive enable +	5	5&13 are connected through relay contacts which are closed				
	6	Ground	6	when the main drives transformer power relay is latched				
	7	Az cw limit	7	7&15 are connected to 8 via NC switches				
	8	Az limit common	8					
	9	el brakes +24V	9					
	10	Ground	10	Belden 9947	maybe			
	11	24V aux	11	awaiting quote from cablestogo.com				
	12	Ground	12					
	13	drive enable -	13					
	14	Ground	14					
	15	Az ccw limit	15					
Ends	A	D15P	Dsub to alidade relay board					
	B	D15S	Dsub to drive box			connects to AWD2A		

AWE7 25-wire cable from alidade relay board to control box								
	A	Description	B	Comment				Length
Wires/pins	1	brakes +24V	1	1,3,5,11,14,16,18, 24 are power and control signals from the				
	2	Ground	2	control box				
	3	24V aux	3					
	4	Ground	4					
	5	5V sensor +	5					
	6	Ground	6					
	7	float in	7	7,8,9,10,12,13,20,21,22,23,25 are logic and sensor signals				
	8	T input1 -	8	returning to the control box				
	9	T input2 -	9					
	10	Az brake sense	10					
	11	Latch	11	main drives transformer power is latched by holding 24 logic high				
	12	Pot 1	12	while pulsing 11 logic low-high-low				
	13	Pot wiper	13	wrap pot is wired to relay board such that resistance between 13				
	14	brakes +24V	14	and 25 increases when azimuth rotates cw				
	15	Ground	15					
	16	24V aux	16					
	17	Ground	17					
	18	5V sensor -	18	awaiting quote from cablestogo.com				
	19	Ground	19					
	20	T input1 +	20					
	21	T input2 +	21					
	22	electronics reset	22					
	23	EI brake sense	23					
	24	Unlatch	24					
	25	Pot 2	25					
Ends	A	D25S	Dsub to alidade relay board					
	B	D25P	Dsub to control box					
AWE8 motor power and brakes for azimuth								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	W1	W		purple	#14		
	2	W2						
	14	W3						
	15	W4						
	3	N/C						
	16	N/C						
	4	V1	V		brown	#14		
	5	V2						
	17	V3						
	18	V4						
	6	N/C						
	19	N/C						
	7	U1	U		blue	#14		
	8	U1						
	20	U1						
	21	U1						
	9	N/C						
	22	N/C						
	10	G1	Ground		green	#14		
	11	G2						
	23	G3						
	24	G4						
	12	BP			blue	#16		
	13	BM			blue	#16		
	25	SHIELD			shield	shield		
Ends	A	D25P	filtered D25S on board					
	B	39-01-2063-P/39-00-0041-C						
	C	39-01-3023-P/39-00-0041-C			wires part of brake			

AWE9 encoders and hall's for azimuth								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	N/C		GND on board	N/C			
	2	U			brown			
	3	V			gray			
	4	W			white			
	5	GND			black		V	
	6	X			purple		Z	
	7	B			green		Y	
	8	A			blue		X	
	9	thermal sensor		GPIN5	orange		W	
	10	GND thermal sensor		GND	orang/white		W	
	11	Vcc (+5V)			red		V	
	12	N/C		GND on board	N/C			
	13	/X			purple/blk		Z	
	14	/B			green/blk		Y	
	15	/A			blue/blk		X	
Ends	A	D15P		filtered D15S on board				
	B	M						
AWE10 motor power and brakes for elevation								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	W1	W		purple	#14		
	2	W2						
	14	W3						
	15	W4						
	3	N/C						
	16	N/C						
	4	V1	V		brown	#14		
	5	V2						
	17	V3						
	18	V4						
	6	N/C						
	19	N/C						
	7	U1	U		blue	#14		
	8	U1						
	20	U1						
	21	U1						
	9	N/C						
	22	N/C						
	10	G1	Ground		green	#14		
	11	G2						
	23	G3						
	24	G4						
	12	BP			blue	#16		
	13	BM			blue	#16		
	25	SHIELD			shield	shield		
Ends	A	D25P		plugs into D25S on board				
	B	39-01-2063-P	Molex					
	C	39-01-3023-P	Molex					

AWE11 encoders and hall's for elevation								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	N/C		GND on board	N/C			
	2	U			brown			
	3	V			gray			
	4	W			white			
	5	GND			black		V	
	6	X			purple		Z	
	7	B			green		Y	
	8	A			blue		X	
	9	thermal sensor		GPIN5	orange		W	
	10	GND thermal sensor		GND	orang/white		W	
	11	Vcc (+5V)			red		V	
	12	N/C		GND on board	N/C			
	13	/X			purple/blk		Z	
	14	/B			green/blk		Y	
	15	/A			blue/blk		X	
Ends	A	D15P		filtered D15S on board				
	B	D15P		D 15p on motor				
AWE12 encoder for azimuth (P/N: R176H-03600Q-5L10-AT40SP-24MN)								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	A			yellow			
	2	B			green			
	3	IND			blue			
	4	N/C			shield			
	5	+V			red			
	6	/A			brown			
	7	/B			orange			
	8	/IND			white			
	9	COMMON			black			
Ends	A	D9P		Dsub on control box				
	B	--		cable part of encoder				
AWE13 encoder for elevation (P/N: 9220S03600D5L10D99SP04EA)								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	A			yellow			
	2	B			green			
	3	IND			blue			
	4	N/C			shield			
	5	+5V			red			
	6	/A			brown			
	7	/B			orange			
	8	/IND			white			
	9	COMMON			black			
Ends	A	D9P		Dsub on control box				
	B	--		cable part of encoder				
AWE14 battery for control box								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	+12V	1	Only 2 wires	red			
	2	+12V	1		red			
	3	N/C						
	4	GND	2		black			
	5	GND	2		black			
	6	+12V	1		red			
	7	N/C						
	8	N/C						
	9	GND	2		black			
Ends	A	D9S						
	B	Spade						

AWE15 Signal from relay board to pie-plate LappUSA (Olflex) 900P Cable, 3 conductor #24, 811442							
	A	Description	B	Comment	Color	Size	Twist
Wires	1	common	1		green	#24	
	2	M-stop	2		white	#24	
	3	reset	3		brown	#24	
Ends	A	Molex 43645-0300/43030-009		on alidade relay board	(Jameco 338360/337738)		
	B	bare		terminal behind pie plate			
AWE16 signal from oil float							
	A	Description	B	Comment	Color	Size	Twist
Wire	1					#24	
	2						
Ends	A	Molex 43645-0200/43030-009		on alidade relay board	(Jameco 338351/337738)		
	B	Crimps?					
AWE17 Signal from temperature sensor to relay board							
	A	Description	B, C	Comment	Color	Size	Twist
Wires	1	GND	B1		Black	#24	
	2	T	B2		Yellow	#24	
	3	+5V	B3		Red	#24	
	4	GND	C1		Black	#24	
	5	T	C2		Yellow	#24	
	6	+5V	C3		Red	#24	
Ends	A	Molex 43025-0600/43030-009		to alidade relay board			
	B	solder to LM35		Lm-35 Device in TO-220			
	C	solder to LM35		Lm-35 Device in TO-220			
AWE18 Signal from az wrap potentiometer							
	A	Description	B	Comment	Color	Size	Twist
Wires	1				red	#24	
	2				yellow		
	3				black		
Ends	A	bare wire	posts on pot				
	B	Molex 43645-0300/43030-009		on alidade relay board			
AWE19 Signal from elevation level sensor and thermal sensor							
	A	Description	B	Comment	Color	Size	Twist
Wires	1	red	+5V			#24	
	2						
	3						
	4						
	5	green	signal				
	6	blue	ground				
Ends	A	Molex 43025-0600/43030-009		on relay board			
	B	solder/leads in elevation can					

Alidade wire harnessing: controller box								
Reference ELMCOOverview.vsd								
7-Mar-06								
AWC1 Power from relay board to power mgmt board								
	A	Description	B	Color	Size	Twist	Length	
Wires	1	100 VAC "L"		White	18		15"	
	2	Return "N"		Black	18		15"	
	3	Ground		Green	18		15"	
Ends	A IEC-320 0.25 quick disconnect F insulated							
	B spade fork term #6, unins bent heat shrink							
AWC2 25-wire cable from alidade relay board to control box								
	A	Description	B,C,D	Comment	Color	Size	Twist	Length
Wires/pins	1	brakes +24V	C1	power mgmt board	brown	all wires #22 AWG	Z	7.5"
	2	Ground	C2		black		Z	7.5"
	3	24V aux	D1		purple		Y	7.5"
	4	Ground	D2		black		Y	7.5"
	5	+5V	B19		red		X	7.5"
	6	Ground	B15		black		X	7.5"
	7	float in	B6		green			7.5"
	8	T 2 input	B9		blue			7.5"
	9	T 4 input	B10		yellow			7.5"
	10	Az brake sense	B13	white			7.5"	
	11	Latch	B7	orange			7.5"	
	12	Pot 1 (GND)	B18	black	W		7.5"	
	13	Pot wiper	B16	green			7.5"	
	14	brakes +24V	C1	power mgmt board	brown		Z	7.5"
	15	Ground	C2		black		Z	7.5"
	16	24V aux	D1		purple		Y	7.5"
	17	Ground	D2		black		Y	7.5"
	18	+5V	B20		red		X	7.5"
	19	Ground	B3		black		X	7.5"
	20	T 1 input	B11		green			7.5"
	21	T 3 input	B12		blue			7.5"
	22	electronics reset (on/off)	B5		yellow			7.5"
	23	EI brake sense	B8	white			7.5"	
	24	Unlatch (drives on/off)	B14	grey			7.5"	
	25	Pot 2 (+5V)	B17	red	W		7.5"	
Ends	A 56-126-004		filtered D25 Socket on top of control b			connects to AWE7B		
	B WM2527-ND/WM62510-ND		2x10 100mil ucntlr board			(22-55-2201/16-02-0102)		
	C 770849-2/770522-1		power mgmt board		relay/brakes		JameCo 236321	
	D 770849-2/770522-1		power mgmt board		HV aux		JameCo 236321	
A: 1: N/C 3: GND 5: RST 7: LTCH 9: T2 11: T1 13: ABS 15: GND 17: P5V 19: +5V								
2: N/C 4: N/C 6: FLT 8: EBS 10: T4 12: T3 14: ULTC 16: WPR 18: GND 20: +5V								
AWC3 encoder for azimuth (P/N: R176H-03600Q-5L10-AT40SP-24MN)								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	A	4		yellow	all wires #24 AWG	Z	5.75
	2	B	6		green		Y	5.75
	3	IND (Z)	8		blue		X	5.75
	4	N/C						
	5	+5V	10		red		W	5.75
	6	/A	3		brown		Z	5.75
	7	/B	5		orange		Y	5.75
	8	/IND (Z)	7		white		X	5.75
	9	COMMON	9		black		W	5.75
Ends	A 56-106-010		filtered Dsub 9 socket on control box			connects to AWE12A		
	B WM2522-ND/WM62510-ND		2x5 0.100" on ucntlr card			(22-55-2101/16-02-0102)		
		1: GND 3: /Z (IND) 5: /B 7: /A 9: NC						
		2: +5V 4: Z (IND) 6: B 8: A 10: NC				in-line w/ battery		

AWC4 encoder for elevation (P/N: 9220S03600D5L10D99SP04EA)								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	A	4		yellow	all wires #24 AWG	Z	5.75
	2	B	6		green		Y	5.75
	3	IND (Z)	8		blue		X	5.75
	4	N/C						
	5	+5V	10		red		W	5.75
	6	/A	3		brown		Z	5.75
	7	/B	5		orange		Y	5.75
	8	/IND (Z)	7		white		X	5.75
	9	COMMON	9		black		W	5.75
Ends	A	56-106-010				connects to AWE13A		
	B	WM2522-ND/WM62510-ND		2x5 0.100" on ucnlrl card			(22-55-2101/16-02-0102)	
		<div>1: GND3: /Z (IND)5: /B7: /A9: NC</div>						
		<div>2: +5V4: Z (IND)6: B8: A10: NC</div>						
AWC5 battery								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires/pins	1	+12V	1		red	18		4
	2	+12V	1		red	same wire		
	3	N/C						
	4	GND	2		black	18		4
	5	GND	2		black	same wire		
	6	+12V	1		red	same wire		
	7	N/C						
	8	N/C						
	9	GND	2		black	same wire		
Ends	A	56-101-010		filtered Dsub 9 pin on control box		connects to AWE14A		
	B	770849-2/770522-1						
AWC6								
standard CAT5 cable		Rj-45						12
AWC7 9V to media converter from power mgmt board								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	+9V	1		black/white	20		13
	2	Common	2		black	20		13
Ends	A	round						
	B	770849-2/770522-1		This connector numbering is opposite to 0.100" connectors				
AWC8 24 V from power supply to power mgmt board								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	+24V	1		red	18		8.25
	2	Common	2		black	18		8.25
Ends	A	spade fork #6x18						
	B	770849-2/770522-1						

AWC95V to SBC								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	+5V	1		red	18		7.5
	2	Common	2		black	18		7.5
Ends	A	15-24-4048						
	B	770849-2/770522-1						
AWC1012 VDC from Pwer Mgment to uCntrlr board								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	+12V	1		red	18		4.5
	2	Common	2		black	18		4.5
Ends	A	770849-2/770522-1						
	B	770849-2/770522-1		0.156" pitch				
AWC11SBC reset (goes between the uCntrlr board and SBC)								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	power	1		green	24	Z	9
	2	ground	2		black	24	Z	9
	3	reset	3		red	24	Z	9
	4	N/C	4	pin 1 on inboard side				
	5	N/C	5					
Ends	A	WM2803-ND/WM62510-ND	1x5 100mil connector on ucntrlr card		(50-57-9005/16-02-0102)			
	B	WM2803-ND/WM62510-ND	1x5 100mil connector on SBC		(50-57-9005/16-02-0102)			
AWC12electronics on/off (between uCntrlr board and power management board)								
	A	Description	B	Comment	Color	Size	Twist	Length
Wires	1	electronics on/off	1		green	24	Z	6.5
	2	ground	2		black	24	Z	6.5
	3	battery voltage /3	3		yellow	24	Z	6.5
Ends	A	1x3 0.100" unpolarized						
	B	1x3 0.100" unpolarized						
AWC13short cat 5 crossover cable between SBC (second LAN) and uCntrlr board								
crossover CAT5 cable								6"

Alidade wire harnessing: drive box

Reference ELMCOview.vsd

7-Mar-06

AWD1 3-wire power cable from cover to rectifier

	A	Description	B	Color	Size	Twist	Length
Wires	1	100VAC (L)		white	18AWG		13.75"
	2	Return (N)		black			13.75"
	3	Ground		green			6.5"
Ends	A	0.25 quick disconnect solder terminals on IEC-320					
	B	bare wire screw terminals on drive board			(soldered butt splice heat shrink)		

AWD2 15-wire cable from drive-box top to daughter board/drive board

	A	Description	B,C,D	Color	Size	Twist	Length
Wires/pins	1	az brakes +24V	C	Brown	all wires #22AWG		4.625
	2	Ground	C	Black			4.625
	3	24V aux	C	Red			4.625
	4	Ground	D	Black			9
	5	drive enable +	B1	Orange			12
	6	Ground	D	Black			9
	7	Az cw limit	B3	Yellow			12
	8	Az limit common	B4	Green			12
	9	el brakes +24V	C	Blue			4.625
	10	Ground	C	Black			4.625
	11	24V aux	C	Purple			4.625
	12	Ground	D	Black			9
	13	drive enable -	B2	Grey			12
	14	Ground	D	Black			9
	15	Az ccw limit	B5	White			12
Ends	A	56-111-010 filtered Dsub15P on driver box top connects to AWE6B					
	B	WM2803-ND/WM625 1x5 100mil connector on daughter card (50-57-9005/16-02-0102)					
	C	bare wire/solder screw terminal on driver board					
	D	gnd lug round #8					

AWD3 temperature sensor cable from drive board to daughter card

	A	Description	B	Color	Size	Twist	Length
	1	GND	3	black			5
	2	T	2	yellow			5
	3	+5	1	red			5
	A	50-57-9003				(on daughter)	
	B	22-01-2037/08-52-123				(on driver)	

AWD4 temperature sensor cable from heatsink to daughter card

	A	Description	B	Color	Size	Twist	Length
	1	GND		black		24	19
	2	T		yellow		24	19
	3	+5		red		24	19
	A	50-57-9003				(on daughter)	
	B	soldered/heat shrink				LM35	

AWD5 temperature sensor cable from airflow to daughter card

	A	Description	B	Color	Size	Twist	Length
	1	GND		black		24	16.75
	2	T		yellow		24	16.75
	3	+5		red		24	16.75
	A	50-57-9003				(on daughter)	
	B	soldered/heat shrink				LM35	

AWD6 rectifier to capacitor 1

	A	Description	B,C	Color	Size	Twist	Length
	1		B,C 1	Red	18	7"	
	2		B,C 2	Black	18	7"	
	A						
	B						
	C						

AWD7 capacitor 1 to capacitor 2

	A	Description	B	Color	Size	Twist	Length
	1	+		1 Red	18		8.5"
	2	-		2 Black	18		8.5"
	A	#8 ring terminal + solder					
	B	#8 ring terminal + solder					

AWD8 resistor (6) to drive board

	A	Description	B	Color	Size	Twist	Length
	1			Red	18		9.5"
	2			Black	18		7.5"
	A						
	B						

AWD9 resistor to rectifier

	A	Description	B	Color	Size	Twist	Length
	1			1 Red	#22		4"
	2			2 Black	#22		4"