ALX and SDA

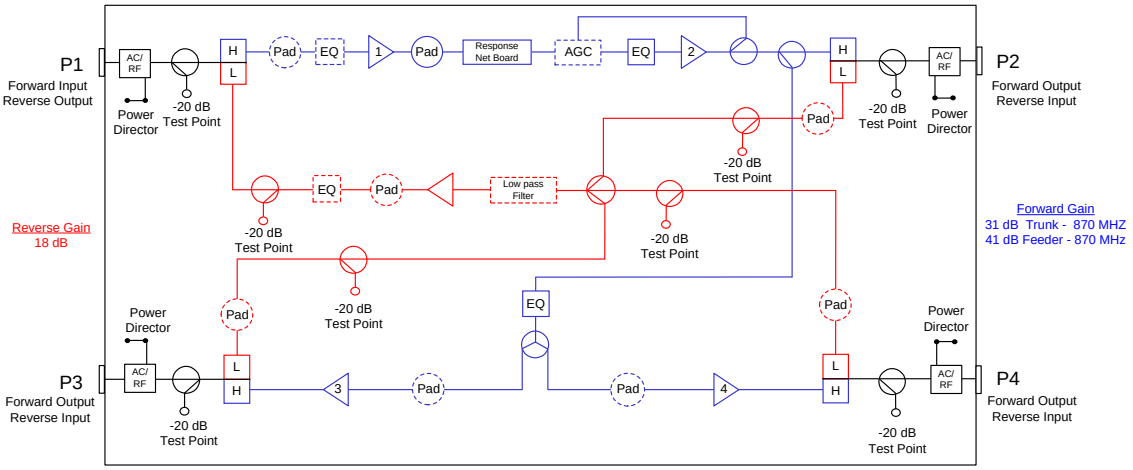
MiniFlex Super Distribution Amplifiers 870 MHz

The ACI MiniFlex super distribution RF amplifiers provided high quality RF distribution for fiber-to-feeder, HFC (hybrid fiber coaxial), or PDN (power domain node) architectures..

Features

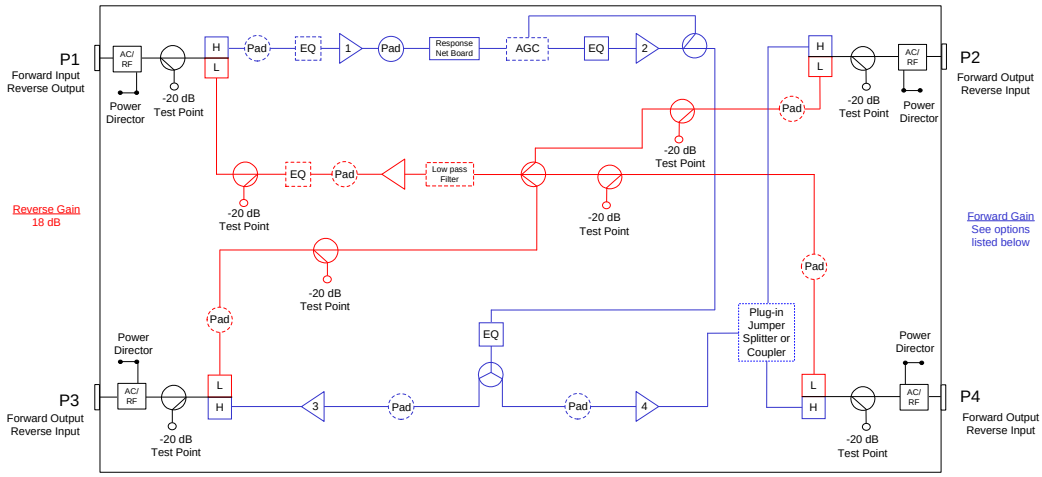
- 870 MHz may be dropped into the 750 MHz spacing
- Common 1002 MHz housing platform
- 15 amp power passing
- Optional, plug-in surge protection (SDA)
- CE qualified (SDA)
- -20 dB directional coupler test points
- AGC or thermal or manual options
- 5 to 42, 55, or 65 MHz reverse path
- Plug-in attenuator pads for each reverse path
- Plug-in equalizers
- Test point for each reverse path

SDAT (Type 1A, 1T & 1M) 870 MHz Amplifier Block Diagram



Note:
1. Forward gain stated at 870 MHz with AGC. Reverse gain stated at 40 MHz.

SDAF (Type 2A-TRI, 2M-TRI, 2T-TRI) 870 MHz Amplifier Block Diagram



Notes:
1. Forward gain stated at 870 MHz with AGC. Reverse gain stated at 40 MHz.
2. Amplifiers are configured at the factory with jumper in Position #2.
   Splitters and couplers are sold separately.

Jumper Position #1

Port	Fwd Gain (dB)
	870
P2	40.0
P3	40.0
P4	N/A

Jumper Position #2

Port	Fwd Gain (dB)
	870
P2	N/A
P3	40.0
P4	40.0

SDASPLTR3.5

Port	Fwd Gain (dB)
	870
P2	36.5
P3	40.0
P4	36.5

SDADC7

Port	Fwd Gain (dB)
	870
P2	33.0
P3	40.0
P4	37.5

SDADC7

Port	Fwd Gain (dB)
	870
P2	37.5
P3	40.0
P4	33.0

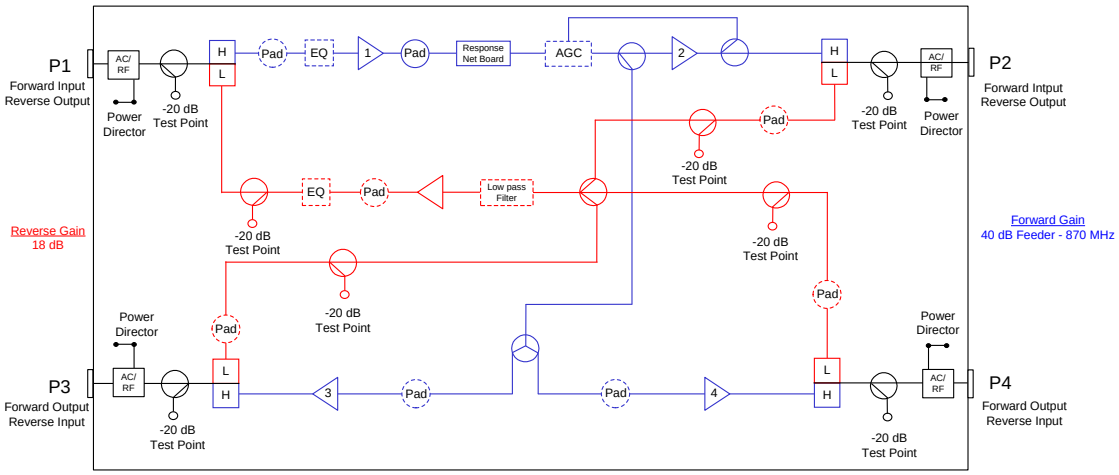
SDADC12

Port	Fwd Gain (dB)
	870
P2	28.0
P3	40.0
P4	38.0

SDADC12

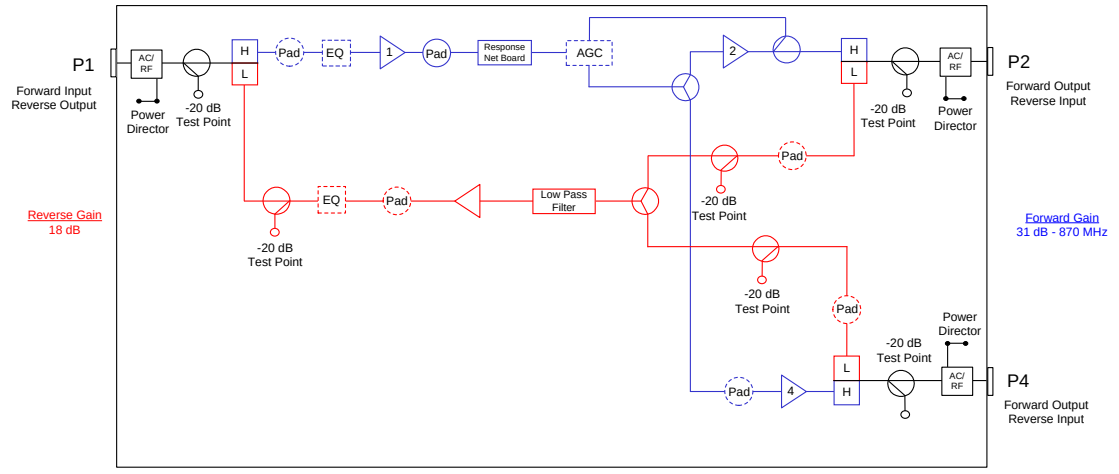
Port	Fwd Gain (dB)
	870
P2	38.0
P3	40.0
P4	28.0

SDBT (Type 6A, 6T & 6M) 870 MHz (Only) Amplifier Block Diagram



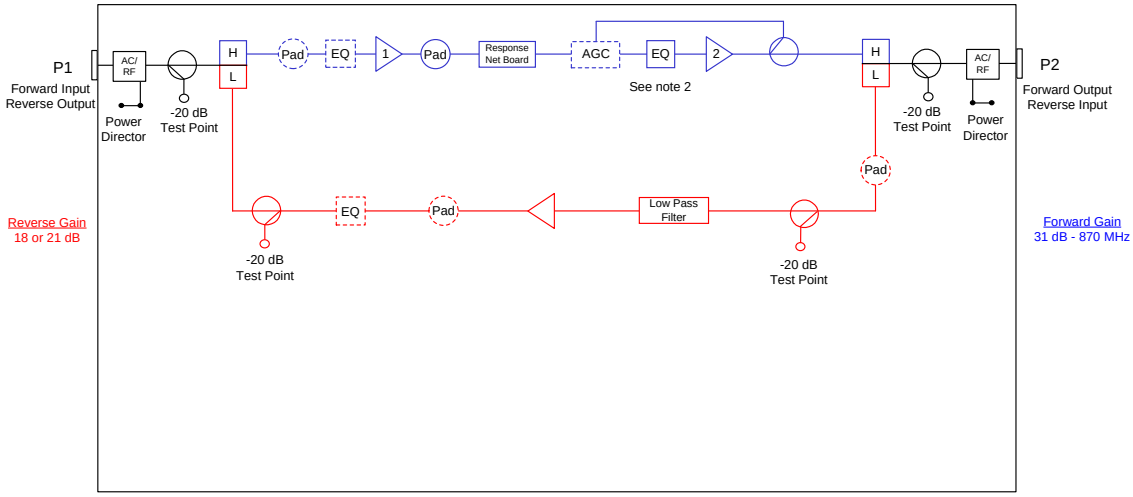
Note:
1. Forward gain stated at 870 MHz with AGC. Reverse gain stated at 40 MHz.

SDLA (Type 3A, 3T, & 3M Dual) 870 MHz Amplifier Block Diagram



Note:
1. Forward gain stated at 870 MHz with AGC. Reverse gain stated at 40 MHz.

SDLE & ALX (Type 3A, 3T, & 3M) 870 MHz Amplifier Block Diagram



Note:
1. Forward gain stated at 870 MHz with AGC. Reverse gain stated at 40 MHz.
2. The interstage EQ is not present in the ALX amplifiers.

STATION PARAMETERS:	870 MHz 42-53 MHz Split						
	CONDITIONS	UNITS	SPECIFICATIONS				
Housing passband		MHz	5 to 1002				
Input current capacity	Any port, worst case	Amperes	15				
Frequency range		MHz	5 - 10	11 - 600	600 - 750	751 - 870	
Frequency range	Time domain @ rated current above	-dBc	55	65	60	55	
Return loss	Any port, worst case	dB	17.0				
Test Points							
Test point type	Directional coupler	N / A					
Test point level		-dB	20.0				
Test point accuracy	Forward test points	±dB	0.5				
Test point accuracy	Reverse test points	±dB	0.75 @ 5 to 7 MHz 0.5 @ 7 to 42 MHz				
Station Slope							
Operational slope - trunk & feeders	@ 54 / 550 / 870 MHz	dB	0 / 9.0 / 14.7				
Slope control type	Cable equalizers	dB	Plug-in EQ's				
Slope control range	Includes cable equivalent	dB	-21.0 to +21.0				
Slope control steps	Equalizer value steps	dB	1.5 cable steps (Approx.1.1 dB slope steps)				
Station Group Delay							
Group delay	Channel 2 (Std)	nSec / 3.58 MHz	30 (25 Typical)				
Group delay	Channel 3		16				
Group delay	Channel 4		10				
Group delay	Channel 5 & >		3				
AGC			SPAGC Single Pilot Channel AGC			DSIM-A Single Pilot Channel AGC	
Type		N / A	NTSC Analog			NTSC Analog or QAM	
Compensation Range		dB	System compensation input change +3/-5 @ 870 MHz			System compensation input change +3/-6 @ 870 MHz	
Accuracy		±dB	0.5			0.5	
Nominal loss	@ 77 ºF (25 ºC)	dB	5.5			6.25	
Center frequency bandwidth			150 (Fc ± kHz)			6 (MHz)	
Configuration			SDAT (Type 1)	SDAF (Type 2 Tri)	SDBT (Type 6)	SDLA (Type 3 Dual)	SDLE / ALX (Type 3)
Operational Specifications							
Station passband		MHz	54 to 870				
Station flatness - trunk out	Normalized w / 0 dB slope	±dB	0.50	-	-	-	-
Station flatness - feeder out		±dB	0.75	0.75	0.75	0.50	0.50
Gain - Port 2 (AGC / Manual)	+0.5 / -0 @ 870 MHz (Temperature stabilized)	dB	31 / 34	-	40 / 43	31 / 36	31 / 36
Gain - Port 3 (AGC / Manual)		dB	41 / 44	40 / 43	40 / 43	-	-
Gain - Port 4 (AGC / Manual)		dB	41 / 44	40 / 43	40 / 43	31 / 36	-
Gain control type		N / A	Plug-in pads				
Gain control steps	Pad value steps	dB	0.5				
550 MHz analog channel loading, 79 channels +320 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier							
Station Output Levels							
Port 2	@ 54 / 550 / 870 MHz	dBmV	26.3 / 35.3 / 41.0	-	36.3 / 45.3 / 51.0	36.3 / 45.3 / 51.0	36.3 / 45.3 / 51.0
Port 3			36.3 / 45.3 / 51.0	36.3 / 45.3 / 51.0	36.3 / 45.3 / 51.0	-	-
Port 4			36.3 / 45.3 / 51.0	36.3 / 45.3 / 51.0	36.3 / 45.3 / 51.0	36.3 / 45.3 / 51.0	-
Station Noise Figure							
Noise figure (w / 1 dB for input EQ loss)	Typ. @ 54 MHz	dB	10.6	11.6	7.7	9.1	8.5
	Typ. @ 550 MHz	dB	8.3	10.1	6.3	8.2	8.2
	Typ. @ 870 MHz	dB	7.9	11.6	6.9	8.0	9.5
Station Distortions (Worse Case)			Trunk / Feeder	Feeder	Feeder	Feeder	Feeder
Composite Triple Beat (CTB)		-dBc	76 / 67	69	69	64	66
Cross Modulation (XMOD)		-dBc	68 / 58	61	58	55	58
Composite Second Order (CSO-)	(Vc +0.75 & -1.25 MHz)	-dBc	68 / 63	63	69	62	62
Composite Second Order (CSO+)	(Vc +1.25 MHz)	-dBc	71 / 67	67	67	66	66
Carrier-to-Intermodulation Noise (CIN)		-dBc	74 / 65	67	67	62	64

REVERSE SPECTRUM:								
REVERSE - CHANNEL LOADING - Typically 23 each, 1.5 MHZ wide QPSK channels.								
Reverse - General	CONDITIONS	UNITS	SPECIFICATION					
Station passband		MHZ	5 to 42					
Station flatness	Normalized w / 0 dB slope	±dB	0.5					
Reverse - Station Gain								
Gain	+0.5 / -0 @ 40 MHz (Temperature stabilized)	dB	18 (18 or 21 for SDLE only)					
Gain control type			Plug-in pads					
Gain control range		dB	12.0					
Gain control steps	Pad value steps	dB	0.5					
Reverse - Station Slope								
Slope control type	Cable equalizers	N / A	Plug-in EQs					
Slope control range		dB	0 to 12.0					
Slope control steps	Equalizer value steps	dB	1.5					
Reverse - Station Output Levels								
@ Forward input port	Average	dBmV	35.0					
REVERSE - STATION DISTORTIONS								
Composite Second Order (CSO)	6 channel loading	-dBc	82.0					
Composite Tripe Beat (CTB)			90.0					
Cross Modulation (XMOD)			80.0					
Reverse - Station Group Delay								
Group delay	5 MHz	nSec / 1.5 MHz	36					
Group delay	7 MHz		16					
Group delay	10 MHz		4					
Group delay	35 MHz		8					
Group delay	38.5 MHz		25					
Configuration			SDAT (Type 1)	SDAF (Type 2 Tri)	SDBT (Type 6)	SDLA (Type 3 Dual)	SDLE / ALX (Type 3)	
Reverse - Noise Figure								
Station noise figure (w / EQ)	Across the bandwidth	dB	13.0	13.0	13.0	13.0	8.5	
Power Requirements:								
DSIM-A / SPAGC	Includes reverse (Worst case)	W	46.5	42.3	44.7	35.7	23.1	
Thermal		W	44.9	40.7	43.1	34.1	21.6	
Manual		W	44.5	40.2	42.6	33.7	21.1	
AC Voltage								
Input ranges		VAC	40-90					
Current Draw (with AGC)								
@ 40 VAC	Maximum	A	1.43	1.32	1.38	1.15	0.79	
@ 50 VAC		A	1.21	1.12	1.17	0.98	0.68	
@ 60 VAC		A	1.06	0.99	1.03	0.87	0.61	
@ 70 VAC		A	0.95	0.88	0.92	0.78	0.55	
@ 80 VAC		A	0.86	0.80	0.83	0.71	0.50	
@ 90 VAC		A	0.77	0.72	0.75	0.64	0.45	
Weight			SDAT	SDAF	SDBT	SDLA	SDLE	ALX
Weight		lbs. (kg)	16.0 (7.26)	16.0 (7.26)	16.0 (7.26)	14.5 (6.58)	14.5 (6.58)	11.0 (4.99)
Physical								
Dimensions - SDA	(H X W X D)	In, (cm)	6.75 X 14.25 X 9.00 (17.1 X 36.2 X 22.9)					
Dimensions - ALX	(H X W X D)	In, (cm)	4.00 X 14.25 X 9.00 (10.2 X 36.2 X 22.9)					
Environmental								
Operating temperature		ºF (ºC)	-40 to +140 (-40 to +60)					

SDA & ALX 15 Amp Product Configuration Worksheet

Customer: _____

Created By: _____ Order Date: _____

ORDERING MATRIX

September 29, 2015

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PART NUMBER															

1 [ ] STATION TYPE

A = ALX 1 Output Low Profile LE
B = SDAB 2 Output Feeder
C = SDLT 1 Output Trunk LE
D = SDLA 2 Output LE
F = SDAF 2 or 3 Output Feeder
J = SDBT 3 Equal Output Feeder
L = SDLE 1 Output LE
T = SDAT 3 Output Trunk

2 [ ] BANDWIDTH FREQUENCY

7 = 750 MHz Upper Frequency
8 = 870 MHz Upper Frequency
9 = 900 MHz Upper Frequency
1 = 1002 MHz Upper Frequency

3,4 [ ][ ] STATION GAIN (Forward) - For 0.5 dB gain values, use the first two digits listed in the part number

Station Type	TYPE 1					TYPE 2					TYPE 3					TYPE 3				
Amplifier Model	SDAT					SDAB					SDLE					ALX				
Frequency	750	870	900	1002 STD	1002 GaN	750	870	900	1002 STD	1002 GaN	750	870	900	1002 STD	1002 GaN	750	870	900	1002 STD	1002 GaN
Max gain with AGC/ Thermal	28	31	31	33	36	38	NA	42	43	46	29	31	32	35.5	38.5	29	31	32	35.5	38.5
Max gain w/AGC bypass	33	34	34	38	41	43	NA	45	48	49	34	36	36	40.5	43.5	34	36	36	40.5	43.5

Station Type	TYPE 2 TRI					TYPE 3 DUAL					TYPE 4				TYPE 6				
Amplifier Model	SDAF					SDLA					SDLT				SDBT				
Frequency	750	870	900	1002 STD	1002 GaN	750	870	900	1002 STD	1002 GaN	750	870	900	1002 STD	750	870	900	1002 STD	1002 GaN
Max gain with AGC/ Thermal	37	40	NA	43	46	28	31	32	35.5	35.5	29	31	NA	33	NA	40	NA	41	44
Max gain w/AGC bypass	42	43	NA	46	49	33	36	36	40.5	40.5	34	36	NA	38	NA	43	NA	44	47

5 [ ] CONTROL TYPE

D = Digital Station Intelligence Manger (DSIM)
T = Thermal Bode
P = Single Channel Pilot (Analog only)
M = Manual (AGC Bypass)
C = Composite AGC (750 MHz only)

6 [ ] CONTROL FREQUENCY

A = Channel 52 391.25 MHz SC or SP AGC
B = Channel 54 403.25 MHz SCAGC only
C = Channel 58 427.25 MHz SPAGC only
D = Channel 59 433.25 MHz SCAGC only
E = Channel 60 439.25 MHz SC or SP AGC
F = Channel 61 445.25 MHz SPAGC only
G = Channel 62 451.25 MHz SC or SP AGC
H = Channel 70 499.25 MHz SC or SP AGC
J = Channel 72 511.25 MHz SPAGC only
M = Channel 70HRC 498.025 MHz SPAGC only
N = Channel 58HRC 426.021 MHz SPAGC only
0 = Thermal Bode
1 = AGC Bypass
2 = DSIM-A Single Pilot AGC (Analog or Digital pilot) - Pilot channel loaded during setup

7 [B] CURRENT PASSING CAPACITY 15A (Continuous on all ports)

8 [ ] STATION SLOPE

	550	650	750	870	900	1002
A=	8.5	10.2	11.9	14.0	14.5	NA
C=	7.6	9.1	10.7	12.5	NA	NA
D=	8.9	10.7	12.5	14.7	NA	NA
E=	9.0	10.8	12.6	14.8	15.3	17.2
F=	7.9	9.4	11.0	12.9	13.4	15.0
T=	7.3	8.8	10.3	12.0	12.5	14.0
*K=	4.1	5.0	5.8	6.8	7.1	7.9

*Slope option "K" is only available on the SDLE and SDLA 1002 MHz stations

9 [ ] HOUSING OPTIONS

0 = No housing or power pack
1 = Module upgrade kit with power supply and seizure screws
E = SDA - Standard with TP
F = SDA - Chromate with TP
B = SDA - Chromate without TP
G = ALX - Standard low profile line extender with TP
H = ALX - Chromate low profile line extender with TP
K = ALX - Chromate low profile line extender without TP

10 [ ] DIPLEX FREQUENCY SPLIT

4 =42 / 53 5 =55 / 70 (870 MHz Only) 6 =65 / 85 (870 MHz Only) 8 =85 / 105 (SDA 1G only)

11 [ ] STATION GAIN (Reverse)

0 = None
1 = Passive
4 = 18 dB min (SDA: T, B, F, LA, BT)
H = 18 dB min (SDLE, LT & ALX only)
R = 21 dB min (SDLE, LT & ALX only)
T = 23 dB min (SDA: T, B, F, BT, LA, LE) - SDA 1G Only
U = 24 dB min (SDLE & ALX) - SDA 1G GaN Only

12 [ ] SURGE PROTECTION

A = Plug-in sidactor (Included in SDA 1002 MHz and all of the ALX amplifiers & recommended for SDA 750, 870 & 900 MHz units)
C = Triac (Included in all SDA power supplies), The sidactor is recommend to increase surge protection level of the SDA units

13,14 [X][X] TEST SPECS (Determined by ACI engineering)

15 [X] SPECIAL/CUSTOMER: LABELS, FUNCTIONS, (Determined by Product Management)

0, 1 = No special instructions
T or R = Trunk line extender for ALX
N = GaN Forward Hybrids (SDA 1G only)
2 = Customer P/N in description
M = Status monitoring pick-offs installed
3 = SDAF w/3 dB splitter installed
C = Module cover with thumb screws (SDA 1G only)

Generic Order Form: Not all configurations are available

Accessory Ordering Information:

The SDA ordering matrix provides the part number information to order the configured stations. This page contains the ordering information for the required accessories that will be needed to make the stations functional in the field or the optional accessories that can be ordered separately.

Required Accessories

	Part Numbers (Where XX.X = dB value)
SXP style attenuator pads • 1 Required for forward input • 1 Required for reverse output (if active)	SXP-XX.XT (0 to 20 dB in 0.5 dB steps)
Forward equalizers • 1 Required forward input	EQDA870/XX.X (1.5 to 21 dB in 1.5 dB steps) CEQ870/XX.X (1.5 to 21 dB in 1.5 dB steps)
Reverse equalizers • 1 Required reverse output (if active)	REQ42/XX.XB (0 to 12.0 dB in 1.5 dB steps)

Optional Accessories

	Part Numbers
Digital Station Intelligence Manager - Single Pilot AGC Module (Analog or Digital)	DSIM-A-MDL-01
Digital Station Intelligence Manager -Controller	DSCT-xxx-yyy xxx = Pilot Channel Number yyy = Channel Type (Analog or Digital / QAM)
Digital Station Intelligence Manager - Cable Assembly For Computer Interface	240327-01
Single Pilot AGC (Analog Only) (See SDA ordering matrix for available pilot channels)	SPAGC870-XX (With 0 dB Pad) SPAGC870-XX-10 (With 10 dB Pad) XX = Pilot Channel Number
Thermal Bode AGC	T-BODE 870M
Manual AGC (Bypass plug-in)	080842
SXP style pads with long handles	SXPLXX.XT (0 to 20 dB in 0.5 dB steps)
Reverse SXP style pads with thermal compensation	THPL-XX.X (1.5 to 20.0 dB in 0.5 dB steps)
DC/SP1 Plug-in - SDAF only	SDA-SPLTR3.5, SDA-DC7, SDA-DC12
Power Supply (40-90 VAC)	SDA90VSP-V3
Test Probe (5.5” Long)	100685-01
Test Probe (1.57” / 4 cm Long)	TP-7504

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Rev E 10-03-2015 Printed in U.S.A.