

1995



PHILIPS

Philips Broadband Network

Aug 1998

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SYSTEMSOLUTIONS

Sole Distributor of Philips SMATV
in Malaysia, Singapore & Brunei



PHILIPS

SMATV Business Unit

May 2002



SOLD

FRACARRO

satcomnet
SYSTEMSOLUTIONS

Sole Distributor of Fracarro SMATV
in Malaysia, Singapore & Brunei

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FRACARRO Introduction

- ▶ Gruppo Fracarro's story starts in **1933**, when the passion for radio frequency leads Bruno and Giovanni Fraccaro to establish **Fracarro Radioindustrie**.
- ▶ In **1954** the television era starts in Italy as well, and Fracarro enters the new market, by starting the **mass-production of antennas and components**.
- ▶ In the **70s** Fracarro acquires **80% of the national market**.
- ▶ In 1984 Fracarro diversifies its business by inaugurating the **Security Division**.

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FRACARRO Introduction

- ▶ In the **90s** Gruppo Fracarro carries on a policy of **expansion** both in Italy and abroad which leads to the **establishment and acquisition of new companies** and industrial and commercial joint ventures, such as **Elit (now Fracarro Tunisie)**.
- ▶ In the **2000s** the international growth strategy strengthens:
 - ▶ **2002**: acquisition of PHILIPS SMATV and establishment of Fracarro France and **Fracarro Asia**
 - ▶ **2003**: establishment of Fracarro **UK** and Fracarro **Portugal**.
 - ▶ **2009**: Fracarro Tunisie becomes the production site for the electronic products.
 - ▶ **2010**: Fracarro Polska is established

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ESTABLISHED 1990

FRACARRO Introduction

GRUPPO FRACARRO



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ESTABLISHED 1990

FRACARRO Introduction

► ISO 9001 Certification

Fracarro Quality System has being recognised by CSQ with ISO 9001: 2008 certification.



► European Directives Conformity

Fracarro's products are compliant, if applicable, to the following European Directives 2006/95/EC (LVD), 2004/108/EC (EMC) and 1999/5/EC (R/TTE).



MATV PROJECT REFERENCE (MALAYSIA)

- KLIA2 Terminal
- KLIA Main Terminal
- Sepang F1 Circuit
- Astro Broadcast Centre
- KLCC Twin Towers
- Club Med Cherating
- The Gurney Resort
- JW Marriot Hotel
- Shangri-la Hotel
- Westin Hotel
- Putrajaya 4G8, 4G9, 4G10, 4G11 P4
- Pavillion Shopping Mall
- Tawakal Hospital @ KL
- ColumbiaAsia Hospital @ Puchong & Taiping
- Gleneagles Intan MC @ KL & Penang
- Sunway MC
- Ampang Puteri MC
- Damansara MC



MATV PROJECT REFERENCE (OVERSEA)

- Suvarnabhumi International Airport @ Bangkok
- Heathrow T5 International Airport @ London
- Dubai International Airport
- Siam Paragon @ Bangkok
- The Oriental Hotel @ Bangkok
- Shangri-la Spa Resort @ Chiangmai
- The Empire Hotel & Country Club @ Brunei
- Burj Al Arab Hotel @ Dubai
- Emirates Towers @ Dubai
- Hilton Jumeirah Beach Resort @ Dubai
- Pearl Broadcasting Corporation @ New Delhi
- Graceland Casino Resort @ Secunda, South Africa



**BASIC
MATV / SMATV**

TV STANDARD

PAL : **B/G**, D/K, I

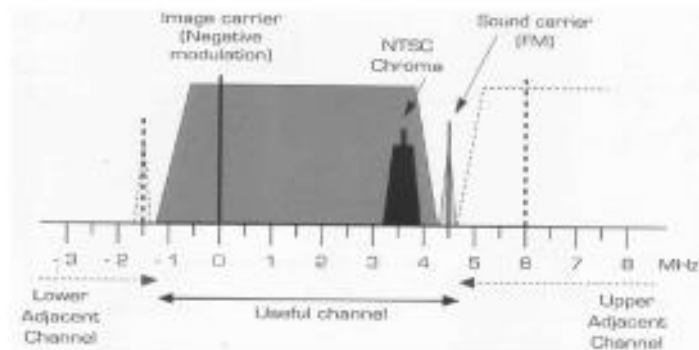
NTSC : M, N

SECAM : E/L, B/G, D/K,

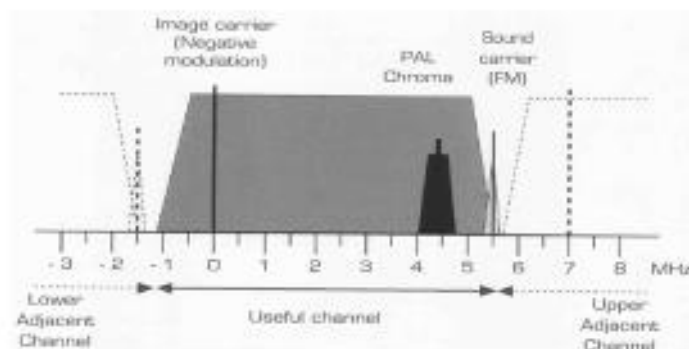
CCIR Standard : A,B,C,D,E,F,G,H,I,K,K1,L,M,N

TV STANDARD COLOUR CODING

*NTSC-M/N Standard
(VHF & UHF)*



*PAL-B Standard
(VHF)*



SMATV Frequency Plan



BASIC MATV / SMATV

MATV : Master Antenna TeleVision

RF : **R**adio **F**requency : 47 – 862 MHz
(VHF) + (UHF)
(47-230MHz) + (470-862MHz)

SMATV : Satellite Master Antenna TeleVision

UBB : **U**ltra **B**road**B**and : 47 – 2150 MHz
(RF) + (IF)
(47-862MHz) + (950-2150MHz)



SMATV Frequency Plan

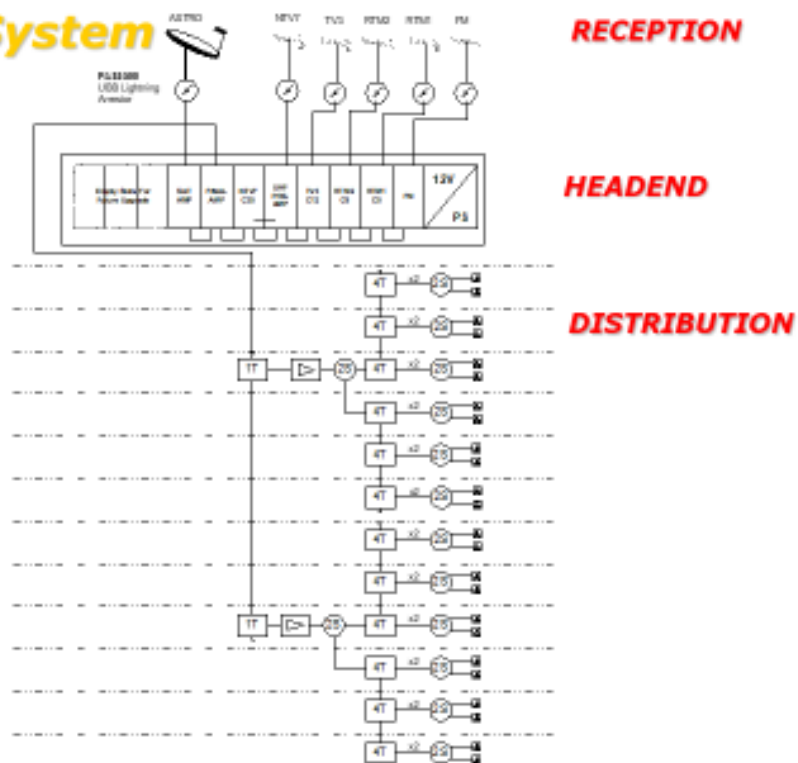


Channel	Channel Frequency MHz	Optimised Frequency MHz	Analogue picture carrier MHz	Channel	Channel Frequency MHz	Optimised Frequency MHz	Analogue picture carrier MHz	Channel	Channel Frequency MHz	Optimised Frequency MHz	Analogue picture carrier MHz
Standard B + S Emission											
Band I				521	38-520	521	38.25	Band V			
C 2	47-54	50.5	48.25	524	525-534	528	527.25	C28	606-614	610	607.25
C 3	54-61	57.5	55.25	525	534-542	538	535.25	C29	614-622	618	619.25
C 4	61-68	64.5	62.25	526	542-550	546	543.25	C40	622-630	626	623.25
Band S				527	550-558	554	553.25	C41	630-638	634	633.25
S 1	69-76	72.5	70.25	528	558-566	562	563.25	C42	638-646	642	639.25
S 2	76-83	84.5	82.25	529	566-574	570	567.25	C43	646-654	650	647.25
S 3	83-90	88.5	86.25	530	574-582	578	579.25	C44	654-662	658	655.25
S 4	90-97	93.5	91.25	531	582-590	586	583.25	C45	662-670	666	663.25
S 5	97-104	100.5	98.25	532	590-598	594	593.25	C46	670-678	674	671.25
S 6	104-111	107.5	105.25	533	598-606	602	599.25	C47	678-686	682	679.25
S 7	111-118	114.5	112.25	534	606-614	610	607.25	C48	686-694	690	687.25
S 8	118-125	121.5	119.25	535	614-622	618	619.25	C49	694-702	698	695.25
S 9	125-132	128.5	126.25	536	622-630	626	623.25	C50	702-710	706	703.25
S10	132-139	135.5	133.25	537	630-638	634	633.25	C51	710-718	714	713.25
Band III				538	638-646	642	639.25	C52	718-726	722	719.25
C 5	14-21	17.5	15.25	539	646-654	650	647.25	C53	726-734	730	727.25
C 6	21-28	24.5	22.25	540	654-662	658	659.25	C54	734-742	738	735.25
C 7	28-35	31.5	29.25	541	662-670	666	663.25	C55	742-750	746	743.25
C 8	35-42	38.5	36.25	Band IV				C56	750-758	754	753.25
C 9	42-49	45.5	43.25	C 9	670-678	674	673.25	C57	758-766	762	759.25
C10	49-56	52.5	50.25	C22	678-686	682	679.25	C58	766-774	770	767.25
C11	56-63	59.5	57.25	C23	686-694	690	687.25	C59	774-782	778	775.25
C12	63-70	66.5	64.25	C24	694-702	698	695.25	C60	782-790	786	783.25
Band S				C25	702-710	706	703.25	LTE			
S11	139-146	142.5	140.25	C26	710-718	714	713.25	C61	790-798	794	793.25
S12	146-153	149.5	147.25	C27	718-726	722	719.25	C62	798-806	802	799.25
S13	153-160	156.5	154.25	C28	726-734	730	727.25	C63	806-814	810	807.25
S14	160-167	163.5	161.25	C29	734-742	738	735.25	C64	814-822	818	819.25
S15	167-174	170.5	168.25	C30	742-750	746	743.25	C65	822-830	826	823.25
S16	174-181	177.5	175.25	C31	750-758	754	753.25	C66	830-838	834	833.25
S17	181-188	184.5	182.25	C32	758-766	762	759.25	C67	838-846	842	839.25
S18	188-195	191.5	189.25	C33	766-774	770	767.25	C68	846-854	850	847.25
S19	195-202	198.5	196.25	C34	774-782	778	775.25	C69	854-862	858	855.25
S20	202-209	205.5	203.25	C35	782-790	786	783.25				
S21	209-216	212.5	210.25	C36	790-798	794	793.25				
S22	216-223	219.5	217.25	C37	798-806	802	799.25				
S23	223-230	226.5	224.25	C38	806-814	810	807.25				
S24	230-237	233.5	231.25	C39	814-822	818	819.25				
S25	237-244	240.5	238.25	C40	822-830	826	823.25				
S26	244-251	247.5	245.25	C41	830-838	834	833.25				
S27	251-258	254.5	252.25	C42	838-846	842	839.25				
S28	258-265	261.5	259.25	C43	846-854	850	847.25				
S29	265-272	268.5	266.25	C44	854-862	858	855.25				
S30	272-279	275.5	273.25	C45	862-870	866	863.25				
S31	279-286	282.5	280.25	C46	870-878	874	873.25				
S32	286-293	289.5	287.25	C47	878-886	882	879.25				
S33	293-300	296.5	294.25	C48	886-894	890	887.25				
S34	300-307	303.5	301.25	C49	894-902	898	895.25				
S35	307-314	310.5	308.25	C50	902-910	906	903.25				
S36	314-321	317.5	315.25	C51	910-918	914	913.25				
S37	321-328	324.5	322.25	C52	918-926	922	919.25				
S38	328-335	331.5	329.25	C53	926-934	930	927.25				
S39	335-342	338.5	336.25	C54	934-942	938	937.25				
S40	342-349	345.5	343.25	C55	942-950	946	943.25				
S41	349-356	352.5	350.25	C56	950-958	954	953.25				
S42	356-363	359.5	357.25	C57	958-966	962	959.25				
S43	363-370	366.5	364.25	C58	966-974	970	967.25				
S44	370-377	373.5	371.25	C59	974-982	978	975.25				
S45	377-384	380.5	378.25	C60	982-990	986	983.25				
S46	384-391	387.5	385.25	C61	990-998	994	993.25				
S47	391-398	394.5	392.25	C62	998-1006	1002	999.25				

TV Frequency Plan (Klang Valley)

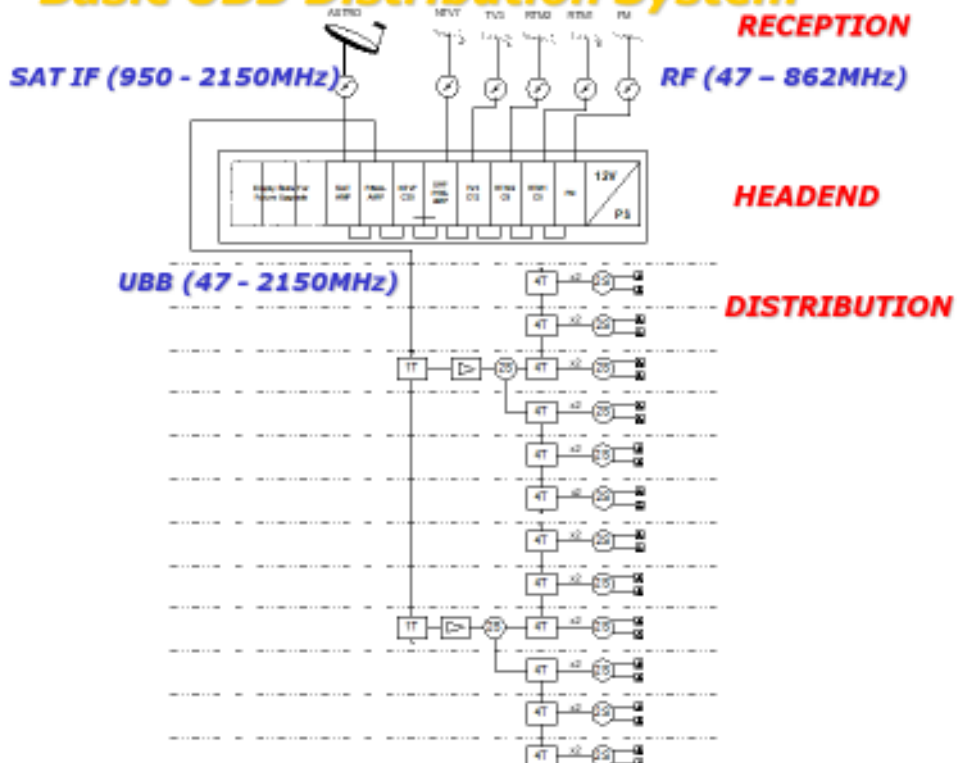
	RTM1	RTM2	TV3	NTV7	TV8	TV9	AHR
Ulu Kali	48	10	29	37	27	42	55
KL Tower	5 (45)	8 (47)	(49)				
Sg Besi	50	53	12	7	58	33	

Basic SMATV System



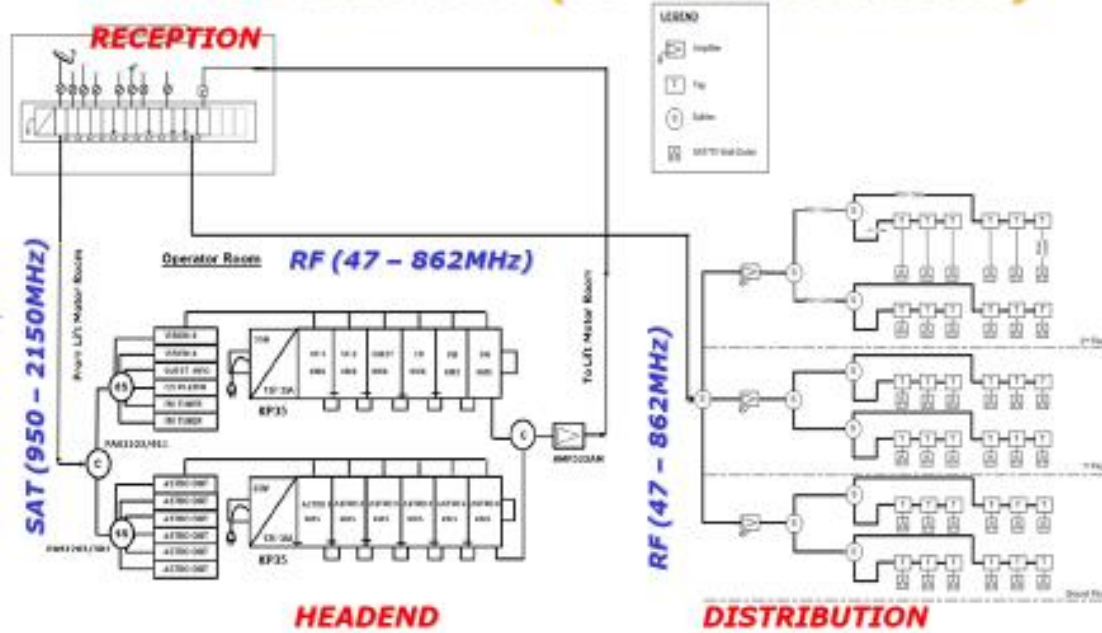
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SYSTEMS

Basic UBB Distribution System



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HOTEL MATV (RF Re-Modulation)



SMATV RECEPTION

The Antenna Ranges



120 References of Antennas to Answer
the Requests of the Market

- VHF Band 1
- VHF Band 3
- UHF Band 4 & 5
- Log-Periodic Band 3, 4 & 5
- Panel Band 4 & 5
- FM "radio" Antennas
- Satellite Dishes



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Satellite Dish

PENTA85

- Patented Unique Design
- Ku-Band Offset 85cm Dish
- Frequency Range 10.7 - 12.75GHz



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VHF Broadband Antennas

TERZA-6HD

- High Gain
- High F/B Ratio
- Individual Packing
- Premounted



Model	Elem. No.	Gain	Front/Back Ratio	Dimension
FRACARRO TERZA6HD	6	11 dB	25dB	119mm
TELEVES 1065	7	9.5dB	20dB	1460mm
ALCAD BT751	7	10dB	10dB	1535mm
IKUSI INT-110	11	10.5dB	20dB	-



UHF Broadband Antennas

TAU15/45

- High Gain
- High F/B Ratio
- Individual Packing
- Premounted



Model	Elem. No.	Gain	Front/Back Ratio	Dimension
FRACARRO TAU15/45	15	12 dB	22dB	970mm
TELEVES 1443	27	14dB	23dB	975mm
ALCAD BT751	19	9.2dB	19dB	868mm
IKUSI INU-B22	19	11dB	20dB	



Log-Periodic Antennas

- High Gain
- High F/B Ratio
- Easy to Install
- Exclusive Design
- Premounted

Model	Band	Gain	Front/Back Ratio	Dimension
LP45N	UHF	10 dB	28dB	840mm
LP345HV	VHF3 / UHF	9 dB	21dB / 27dB	970mm



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SATELLITE COMMUNICATIONS

FM Antennas

Fracarro has in its range a solution with 3 FM antennas

- ANT1200A (2.1dB Gain)



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SATELLITE COMMUNICATIONS

The Electronic Accessories Ranges

94 references to be used with the Fracarro terrestrial antennas

- Combiners
- Channel Attenuators
- Mast Amplifiers
- Indoor Amplifiers
- Power Supplies



SMATV HEADEND

The Head Ends Range

FRACARRO up-grades the range of Head ends to process signals for all SMATV requirements



K-Series

Multiband / Profiler



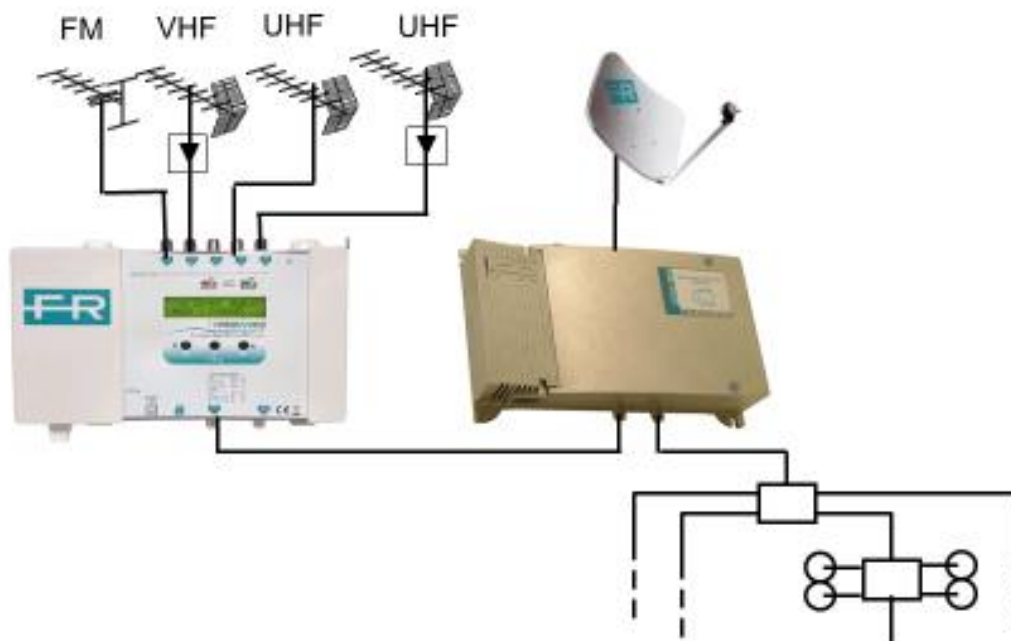
D-Matrix



3DGFlex

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Multiband Amplifiers Headend



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Multiband Amplifiers Headend

Multiband Amplifiers Have the Ability to Combine and Amplify Signals from Several Sources.

RF Multiband Amplifier

- MBX Series (Big System)
- MBJ Series (Small System)

SAT Amplifier

- AMP9764



Multiband Amplifier

MBJ3R3UU



5 inputs	1+FM, 3, 4 (E21-E41), 5 (E45-E69), UHF
Output level	110 dBuV / 117 dBuV
Gain	31 dB

MBX5851

5 inputs	FM, 1, 3, UHF, UHF
Gain	34dB (VHF) / 44dB (UHF)
Output	116dB (VHF) / 119dB (UHF)



SATELLITE AMPLIFIERS

AMP9764

- Push-Pull Amplifiers
- Main Powered 220-240V
- Frequency Of 950 – 2150 MHz
- Integral LNB Power Supply
- Terrestrial Loop Through
- High Gain of 40dB
- High Output of 125dB
- 20dB Antennuation & Equalization



PROGRAMMABLE HEADEND AMPLIFIERS

FRPRO-HDEVO

- 5 Inputs (4x VHF/UHF & 1x FM)
- Process >50 Channels
- AGC on Individual Multiples
- Frequency Of 88 – 862 MHz
- High Gain of 45-55dB
- High Output of 120dB
- Main Powered 100-240V



SMATV DISTRIBUTION



RF (MATV) Broadband Amplifiers

J31B

Freq	47-862 MHz
Base Noise	10 dB
Output level	117 dBuV
Gain	31 dB (20dB Attenuator & 20dB Equaliser)



AMP9762

Freq	5-862 MHz
Base Noise	8 dB
Output level	121 dBuV
Gain	40 dB (20dB Attenuator & 20dB Equaliser)



SMATV Broadband Amplifiers

AMP9763

Freq	5-2400 MHz
Base Noise	8 dB
Output level	121 dBuV (RF), 125 dBuV (SAT)
Gain	40 dB (RF) & 40 dB (SAT)
Adjustment	20 dB Attenuator & 20dB Equaliser



SBA9563

Freq	47-2400 MHz
Base Noise	8 dB
Output level	120 dBuV (RF), 120 dBuV (SAT)
Gain	35 dB (RF) & 40 dB (SAT)
Adjustment	20 dB Attenuator & 20dB Equaliser

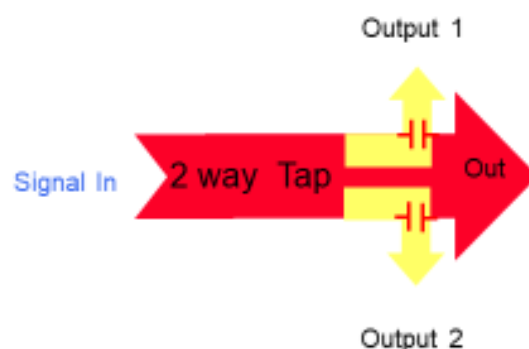


PASSIVE COMPONENTS

SPLITTER



TAP



PASSIVE COMPONENTS

UBB SPLITTERS

2-ways : SPTR2 4-ways : SPTR4

3-ways : SPTR3 6-ways : SPTR6



UBB TAPS (Directional Coupler)

2-ways : TAPS212 (12dB), TAPS215 (15dB), TAPS220 (20dB)

4-ways : TAPS412 (12dB), TAPS415 (15dB), TAPS420 (20dB)

6-ways : TAPS616 (16dB), TAPS620 (20dB)

8-ways : TAPS816 (16dB), TAPS8-20 (20dB)