

Broadband Multicouplers

- Wide Bandwidth
- 2 to 32 Outputs Available
- Modular Construction

Description

The MC-200X series multicouplers offer a versatile adaptable means for realizing customized multicouplers to cover very broad ranges with 2,4,6,8,10,12,16,20,24, or 32 outputs.

These multicouplers consist of broadband solid state amplifiers and appropriate power dividers mounted with a power supply in an aluminum 3½ inch rack panel chassis for mounting in a standard EIA 19 inch rack. Access to components is obtained by removing the top cover.

Bench mounted units of most multicouplers with 8 outputs or less are available as the MC-210X series.

All multicouplers except the MC2104 and MC-2105 units incorporate resistive output dividers or isolating devices at the output to avoid the need for terminating unused ports. When ordering the MC-2004, 2104, 2005 or 2105 units, terminations should be ordered separately for any unused ports. Any unterminated port on these units will reduce output to output isolation and degrade the band-pass flatness. A warning to terminate the unused ports is marked on the rear panel of such units.

MC-200X series multicouplers consist of one or more preamplifiers driving one or more power dividers all mounted within a chassis that includes a power switch, fuses, pilot light and power supply. Within the MC-200X series, resistive or reactive power dividers and several combinations of amplifiers and power dividers are used. In some high isolation units, attenuator pads or Ferrite Isolators are used in the output lines to achieve the specified isolation. In many cases, particularly below 3GHz, the specified operating frequency range is limited only by that of the amplifier since many of the power dividers used are of the resistive type and perform well from DC to 3GHz.

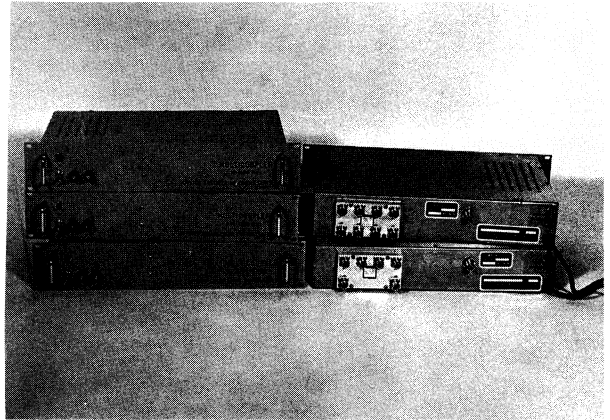


Figure 1 Typical MC 200X Series Multicouplers

Since the specified operating frequency range of the multicoupler is always within the 1dB bandwidth of the amplifiers, many multicouplers will offer reasonable or close to specified performance at frequencies sometimes well above or below the specified frequency. In cases where "out of band" performance is undesirable, an appropriate filter (series FA) can be incorporated. A partial listing of available filters is contained in table I. Filters may be purchased separately. Please provide model number/serial number from rear panel of unit when ordering filters for field installation.

Options

Limiter option 26 or 27 is recommended whenever the multicoupler input is connected directly to an antenna or other source that can accidentally provide more than +17dBm input to the multicoupler. The insertion loss of these limiters adds 0.7dB Noise Figure at frequencies of 4GHz and below, 1dB over the 4-8GHz range, 2.3dB over the 8-12GHz range and 2.7dB over the 12-18GHz range. Maximum input to these limiters is 100 watts peak power and 1 watt average power except for the 5-1500 MHz range which can sustain 5 watt average power.

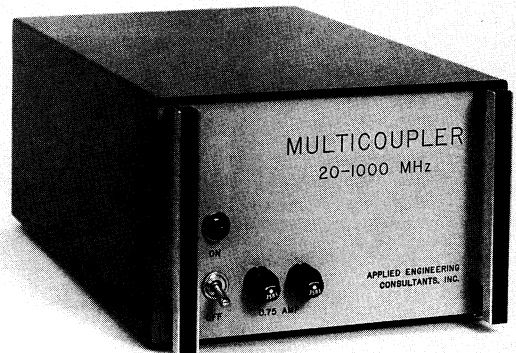


Figure 2 Typical MC-210X Multicoupler

Switched multicouplers, dual multicouplers, half width packaging and half-height packaging can be supplied on most units with eight or fewer outputs.

Option DV (\$25.00) provides for 105-125 or 208-230 volt input, 50 to 400 Hz. Selection is by rear panel slide switch. This option is recommended whenever the equipment might be deployed overseas.

Construction

All multicouplers are constructed in an aluminum chassis, with chromate conversion (iridite) finish, using stainless steel fasteners. Internal coaxial cables are semi-rigid or double shielded RG 223/U with Type N, TNC or SMA connectors to provide good RF shielding. Units can be provided with EMI power line filters and closure gaskets on special order.

Standard power supply cooling is by convection through the top surface perforations. Waveguide vents can be supplied on most units, and are normally installed on each side, but require a 5¼ inch panel space for rack mounting.

Forced air cooling is available as an option on all units and is standard on high dissipation units¹ only.

Relatively cool equipments can be mounted immediately below these multicouplers regardless of ambient temperature but at least 1 inch of space should be provided above each multicoupler if ambient temperatures are expected to exceed 30 degrees C. Maximum dissipation in most multicouplers is 25 watts with typical dissipation of 15 watts.

Connectors

The standard input connector is Type N jack. Output connectors can be BNC, TNC, SMA, or type

N jack and are selected by adding a suffix letter B,T,M, or N respectively to the end of the part number before adding the option suffixes. BNC connectors are not recommended for use above 1.5 GHz.

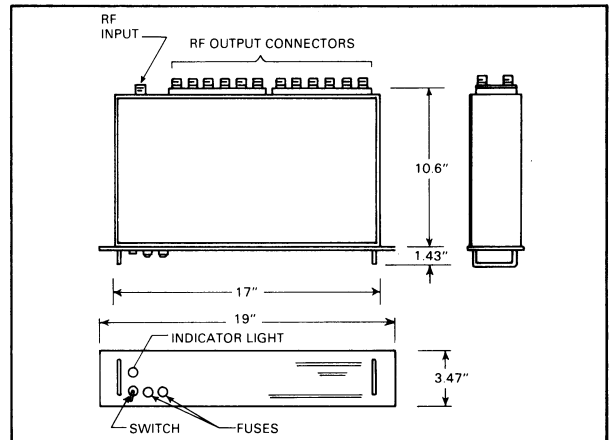


Figure 3 Typical Outline MC 200X Multicoupler.

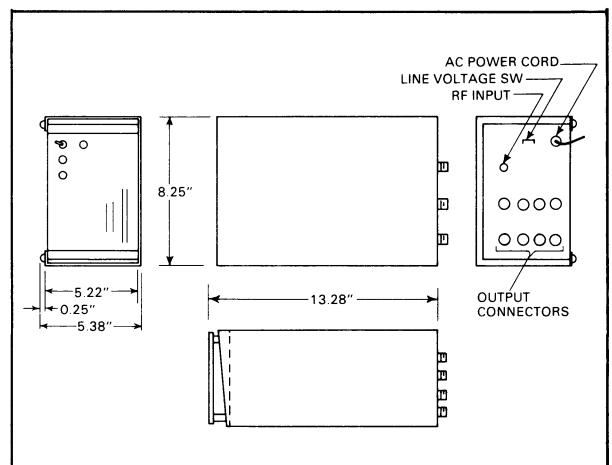


Figure 4 Typical Outline, MC 210X Multicoupler.

¹MC-2010-60-32 and MC-2004-8410-8

Table I. Filters Available for MC 200X Family of Multicouplers

Option No.	Bandwidth in MHz				Insertion Loss (dB max)	Filter Part No. ¹ If ordered separately		Option No.	Bandwidth in MHz				Insertion Loss (dB max)	Filter Part No. ¹ If Ordered separately)
	1dB	3dB	30dB	60dB					1dB	3dB	30dB	60dB		
FA-1	200-500	180-520	30-600	—	2.0dB	DP-350-340-9		FA-9	—	60-70	—	—	1.3dB	FHP-65-10-7
FA-2	20-70	—	10-95	—	1.0dB	FX45X50-5		FA-10	100-150	—	75-175	—	1.0dB	FX125-X50-5
FA-3	—	—	75-250	—	1.5dB	FX125X70-5		FA-11	—	95-155	40-190	—	1.5dB	HP125-60-5
FA-4	—	—	100-585	—	0.5dB	HQ-365X170-5		FA-12	30-50 ³	20-60 ³	—	10-90 ³	1.5dB	FX45-50-7
FA-5	110-140	100-150	—	54-175	0.7dB/0.5 typ	HP-125-50-8		FA-13	70-240	60-260	—	40-360	1.5dB	FX155-200-5
FA-6	102-133	100-125	—	85-156	0.9dB	HP112-25-8		FA-14	30-60 ³	20-70 ³	—	10-85 ³	2.0dB	FX45-50-8
FA-7	—	30-70	—	10-90	2.0dB/1.7 typ	FX50-40-7		FA-15	—	—	800-2500 ⁴	—	1.0dB	2B1500-1000-9ASL
FA-8	—	55-75	35-88	—	1.5dB	HP65-20-5		FA-16	—	—	1.6-1.4 ⁴	—	1.0dB	2B3000-2000-12ASL

¹ TNC jack standard Type N BNC SMA also available

² Mounting Blocks Standard

³ 80dB rejection @ 90MHz

⁴ 45dB Bandwidth n GHz

Summary of ASI Multicouplers

Frequency Range (MHz)	Number Outputs	Isolation (dB)	Dynamic Range dB/MHz		Noise Figure (dB)	Input Intercept (dBm)		1dB Input Gain Comp (dBm)	SWR In/Out	Gain (dB)	Part Number	4/30/89 Price
			Even	Odd		Even	Odd					
0.5-30	8	50	92	92	6.0	+28	+28	+7	2:1/2:1	2+/-1.5	MC2204-9076-8	\$ 1,700.00
0.5-60	8	65	84	84	7.0	+20	+20	0	2:1/2:1	0-3	MC2005-60-8	10,350.00
	32	65	89	89	6.0	+26	+26	+6	2:1/2:1	0-3	MC2010-60-32	21,190.00
2-30	8	40	114	114	7.0	+25	+25	+7	2.2:1/1.6:1	0-2	MC2002-8894-8	2,770.00
	8	50	114	114	6.0	+28	+28	+6	2.2:1/1.6:1	0-2	MC2004-8893-8	1,600.00
2-32	4	20	89	89	7.0	+23	+23	+3	2:1/2:1	2-3	MC2000-8332-4	1,950.00
	4	55	85	85	8.0	+29	+29	+3	2:1/2:1	3-4	MC2000-8331-4	3,790.00
2-60	8	30	109	89	8.5	+58	+28	+16	1.5:1/1.5:1	0+/-1	MC2004-7953-8	1,980.00
.002-300	4 *	30	65	65	4.5	-6	-6	-20	2:1/1.5:1	0-3	MC2000-8159-4 *	1,330.00
	8	45	65	65	4.5	-6	-6	-20	2:1/1.75:1	0-3	MC2000-8143-8	1,560.00
2-400	8	44	73	73	7.5	+3	+3	-7	2:1/1.5:1	0+/-1	MC2000-8149-8	1,800.00
	16	50	75	75	9.0	+8	+8	-2	2:1/1.5:1	2	MC2006-8420-16	3,200.00
5-400	16	45	69	69	10	0	0	-7	2:1/1.5:1	0+/-2	MC2000-GPA-2300-1	1,680.00
30-400	4	30	80	80	6.0	+19	+19	+5	2:1/2:1	0-1	MC2000-7997-4	2,205.00
	8	45	87	76	6.0	+26	+10	-7	2:1/2:1	0-3	MC2000-545-8	1,622.00
	8 *	30	92	88	7.0	+32	+28	+2	2:1/2:1	0-1	MC2009-8906-8 *	1,640.00
5-500	2	38	72	72	5.0	0	0	-13	2:1/1.5:1	0	MC2007-512-2	900.00
	4	40	71	71	7.0	+11	0	-12	2:1/2.5:1	0	MC2007-523-4	925.00
	4	45	78	78	6.0	+10	+10	-4	2:1/1.5:1	0	MC2002-533-4	950.00
	6	30	71	71	7.0	+11	0	-12	2:1/1.5:1	0	MC2000-523-6	995.00
10-500	2	38	76	76	6.0	+6	+6	-1	2:1/2:1	3-6	MC2007-502-2	993.00
	2	18	84	84	4.5	+17	+17	+1	2:1/1.5:1	0+/-1	MC2000-544-2	845.00
	4	30	80	80	6.0	+19	+19	+5	2:1/1.5:1	0	MC2000-7997-4	1,825.00
	6	25	84	84	10	+23	+23	+8	2:1/2:1	0	MC2000-508-6	1,265.00
	8	44	71	71	6.0	+10	+10	-11	2:1/1.5:1	0	MC2000-8045-8	1,138.00
	8	45	71	71	9.0	+2	+2	-10	2:1 2:1	0-4	MC 2000-8054-8	1,235.00

- 1 - Replaces MC 2000-800-8
2 - Includes limiter option in base unit
3 - 2 dB Input Compression
4 - Replaces MC 2004-144-8
5 - Replaces MC 2001-8056-12

- 6 - Replaces MC 2001-8320-8
7 - Replaces MC 2000-407-8 except output 1 dB compression is +22dBm vs +23 dBm, and input 1dB compression is +20 dBm vs +23 dBm. This unit is intended as a cable driver.
8 - Replaces MC 2000-7985-4

Options available, P/N example MC 2000-407N-12-27-99. Base item is MC 2000-407, suffix N is added for output connector type. Option numbers follow in alphanumeric order, each separated by a dash. Suffix M is SMA type; B is BNC type; T is TNC type; N is N type. DV=Dual voltage for 105-125/208-230 volt input, 50 to 400 Hz. \$25.00

- 13 - Special MIL STD front panel color (specify in description). \$20.00
24 - Multipin power connector. \$38.00
26 - RF limiter, 1-18 GHz. \$390.00

- 27 - RF limiter, 5-1500MHz. \$335.00
95 - 24 volt DC operation. \$250.00
99 - Rear panel fuses in lieu of front panel fuses. \$20.00

Complete part number consists of base number with suffix designating output connector type, N for type N, M for type SMA, B for type BNC, T for type TNC. Option numbers follow alphanumeric order, each separated by a dash.

Summary of ASI Multicouplers (Continued)

Frequency Range (MHz)	Number Outputs	Isolation (dB)	Dynamic Range dB/MHz		Noise Figure (dB)	Input Intercept (dBm)		IdB Input Gain Comp (dBm)	SWR In/Out	Gain (dB)	Part Number	4/30/89 Price
			Even	Odd		Even	Odd					
2-1000	4	40	90	75	5.5	+28	+5	-10	2:1/1.5:1	0-1	MC2007-8123-4	1,075.00
	8	40	69	69	5.5	-5	-5	-17	2:1/1.5:1	0-2	MC2000-7952-8	1,585.00
10-1000	4	32	89	81	10	+30	+18	+4	2:1/1.5:1	0+/-1	MC2000-8160-4	1,700.00
	6	15@10-30 20@30-300 25@ 300-1000	82	82	9.0	+18	+18	+4	2:1/2:1	-1	MC2000-1003-6	1,285.00
	6 ^{2,4}	40	74	74	5.0	+4	+4	-12	1.7:1/1.5:1	2	MC2000-8407-6 ^{2,4}	1,695.00
	8	32	82	78	8.0	+18.5	+11	-2	2:1/1.5:1	1-3	MC 2001-8305-8	3,225.00
	8	45	75	75	7.5	+7	+7	-4	2:1/2:1	1	MC2001-8062-8	2,870.00
	8	50	75	75	10	+9	+9	-1	2:1/1.7:1	0+/-2	MC2006-8403-8	3,150.00
	12 ^{2,5}	40	82	78	8.0	+18	+11	-1.5	2:1/1.5:1	1-3	MC2000-8311-12 ^{2,5}	3,310.00
	12	50	78	78	8.5	+11.5	+11.5	+3	2:1/2:1	2+/-1	MC2010-9079-12	2,500.00
	16	45	74	74	9.0	+7	+7	-2	2:1/1.5:1	1+/-1	MC2001-8055-16	2,575.00
	8	40	69	69	10	+18	+18	0	2:1/2:1	0-3	MC2019-1054-8	3,840.00
20-1500	8	40	69	69	10	+18	+18	0	2:1/2:1	0-3	MC2019-1054-8	3,840.00
1-2000	8	41	68	68	6.0	-5	-5	-15	2.5:1/2:1	2-5	MC2000-2030-8	1,750.00
10-2000	4	42	74	74	10	+8	+8	-2	2:1/1.7:1	0	MC2000-8409-4	2,540.00
	6	40	75	75	7.5	+7	+7	-7	2:1/1.5:1	1	MC2000-8408-6	1,700.00
	8	40	74	74	7.5	+7	+7	-4	2:1/1.5:1	1	MC2001-8062-8	2,996.00
	8	45	70	70	6.5	-2	-2	-12	2:1/1.5:1	0	MC2001-8061-8	1,778.00
	12	10	70	70	7.0	-1	-1	-20	2:1/1.5:1	1	MC2001-8087-12	2,808.00
500-1000	8 ⁷	20	88	88	10	+29	+29	+20	2:1 /2:1	2 Typ	MC2004-8410-8 ⁷	3,780.00
1000-2000	8	55	74	74	8.0	+4	+4	-9	2:1/1.5:1	0-3	MC2002-2000-8	2,370.00
	10 ^{2,3}	46	72	72	10	+5	+5	0	2:1/1.5:1	3-4	MC2000-2000-10 ^{2,3}	2,470.00
2000-4000	4	37	85	85	8.0	+25	+25	+15	2:1/1.5:1	0+/-1	MC2004-8416-4	2,650.00
	4	38	91	91	9.0	+32	+32	+22	2:1/1.5:1	0+/-2	MC2003-8413-4	3,740.00
	8	28	87	87	10	+27	+27	+17	2:1/2:1	0+/-1	MC2004-8415-8	3,840.00
	8	45	86	86	11	+26	+26	+16	2:1/2:1	0+/-1	MC2003-8414-8	5,095.00
4000-8000	8 ¹	36	75	75	7.0	+10	+10	0	2:1/2:1	0+/-1	MC2004-8417-8 ¹	3,925.00
8000-12,400	4	33	70	70	9.0	+2	+2	-11	2:1/2:1	10 Typ	MC2003-12,400-4	4,890.00
	8	40	70	70	8.0	+2	+2	-8	2:1/2:1	0-3	MC2000-12,400-8	4,950.00

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2 - Includes limiter option in base unit

3 - 2 dB Input Compression

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