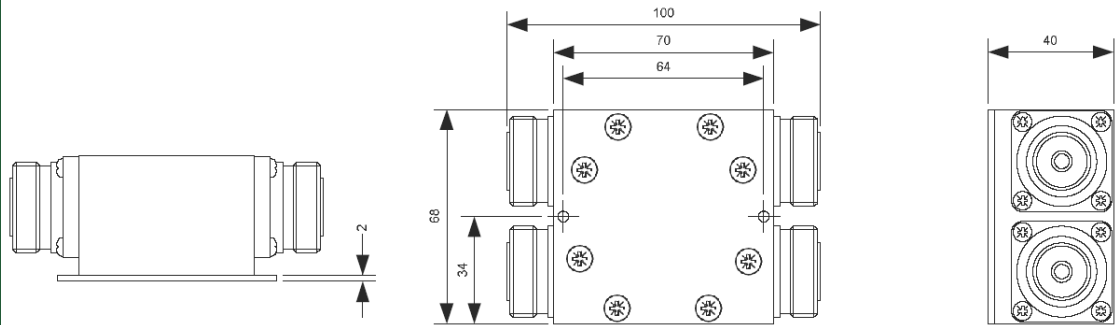


Hybrid Combiners

Selection Guide: 4 Port Hybrid Couplers

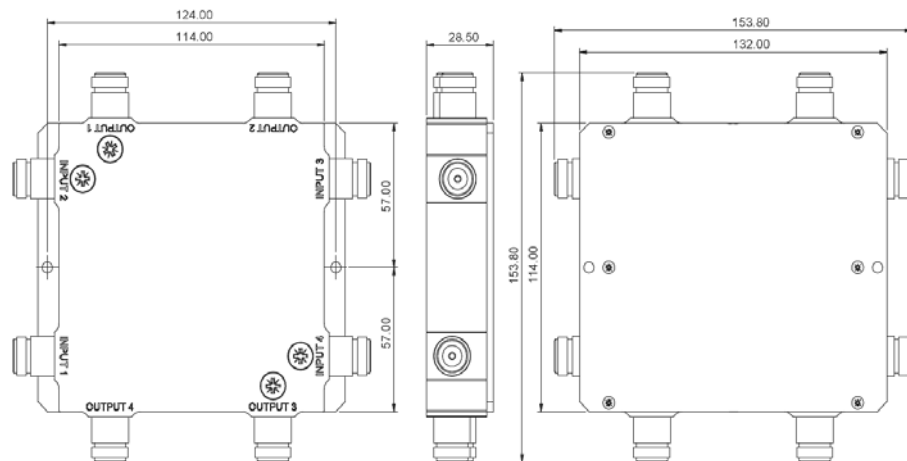
| Part No. | Freq Range (MHz) | Insertion Loss (dB) | Max Return Loss (all ports) (dB) | Min. Isolation (dB) | Power (Splitting) (W) | Power (Coupling) per port (W) | Environ. | Temp (°C) | Conns |
|-----------|------------------|---------------------|----------------------------------|---------------------|-----------------------|-------------------------------|----------|-------------|-------------|
| 17-015001 | 800 – 2500 | 3 ± 0.6 | 19 | 20 | 100 | 50 | IP65 | -20 to + 55 | N Female |
| 05-003208 | 1920 - 2170 | <3.5 | 18 | 18 | 100 | 50 | IP65 | -20 to + 55 | 7-16 Female |
| 05-003203 | 870 – 960 | <3.5 | 18 | 18 | 100 | 50 | IP65 | -20 to + 55 | 7-16 Female |
| 05-003205 | 1710 - 1880 | <3.5 | 18.5 | 18 | 100 | 50 | IP65 | -20 to + 55 | 7-16 Female |



05-003208

Specifications: 4 In/4 Out Combiner

| Part No. | Freq Range (MHz) | Insertion Loss (dB) | Max Return Loss (all ports) (dB) | Min. Isolation (dB) | Power (Splitting) (W) | Power (Coupling) per port (W) | Environ. | Temp (°C) | Conns |
|-----------|------------------|---------------------|----------------------------------|---------------------|-----------------------|-------------------------------|----------|-------------|----------|
| 07-019001 | 800 - 960 | <6.5 typically 6.1 | 20 | 22 | 200 | 100 | IP65 | -20 to + 55 | N Female |



07-019001

3 dB Hybrid Coupler (90°)



A 3dB, 90° hybrid coupler is a four-port device that is used either to equally split an input signal with a resultant 90° phase shift between output signals or to combine two signals while maintaining high isolation between them.

Whether you are designing a duplexer, combining amplifiers or just need a 90° phase shift with high isolation to avoid mixing signals, then DrawCom's 705 series will help you achieve your objectives. Our line of 3dB 90° hybrid couplers covers all wireless band applications from cellular through UMTS (0.800-2.200 GHz) with power levels to 500 watts. Additionally, your applications will benefit from low insertion loss and excellent VSWR.

| Part No. | Connector Style | Frequency (GHz) | Input Power (Watts) | Coupling Variation (Total) (dB) | Isolation (Typ) (dB) | VSWR (Max) | Phase Balance (degrees) |
|-----------------|-----------------|-----------------|---------------------|---------------------------------|----------------------|------------|-------------------------|
| 705N-1.500V | N-Female | 0.800 - 2.200 | 120 | 3 dB ± 0.5 | 18 | 1.30:1 | 5 |
| 705S-1.500V | SMA-Female | 0.800 - 2.200 | 120 | 3 dB ± 0.3 | 18 | 1.30:1 | 5 |
| H705N-0.460-M01 | N-Female | 0.400 - 0.520 | 500 | 3 dB ± 0.3 | 30 | 1.15:1 | 3 |
| H705N-0.900 | N-Female | 0.800 - 1.000 | 500 | 3 dB ± 0.5 | 25 | 1.15:1 | 3 |
| H705N-1.950 | N-Female | 1.700 - 2.200 | 500 | 3 dB ± 0.5 | 22 | 1.20:1 | 3 |

Notes:

1. 705 Series has a peak power rating of 3 kW, H705N Series is rated at 10 kW.
2. 50 ohm nominal impedance standard.
3. Operating temperature range is -55° C to +85° C.
4. DrawCom offers a 250W conduction cooled termination/load available for above models: Part # CTN-250.

3 dB Hybrid Ring (0°/180°)



A hybrid ring is a four-port device that is used either to equally split an input signal or to sum two combined signals. An additional benefit of the hybrid ring is to alternately provide equally-split but 180 degree phaseshifted output signals.

Our range is equipped with brass N-Female or stainless steel SMA-Female connectors, silver-plated N or gold-plated SMA contact pins and a rugged, precision, CNC machined aluminium housing coated with a yellow iridite finish for long lasting, reliable performance.

| Part No. | Frequency (GHz) | VSWR (Max) | Isolation (dB) | Z | X | Y |
|-----------|-----------------|------------|----------------|-------|------|-------|
| 700-0.900 | 0.810 - 0.960 | 1.20:1 | 22 | 6.366 | 7.53 | 7.136 |
| 700-1.085 | 1.020 - 1.150 | 1.20:1 | 22 | 5.192 | 6.35 | 5.962 |
| 700-1.300 | 1.200 - 1.400 | 1.20:1 | 22 | 4.316 | 5.48 | 5.086 |
| 700-1.550 | 1.450 - 1.650 | 1.25:1 | 22 | 3.624 | 4.78 | 4.394 |
| 700-1.850 | 1.700 - 2.000 | 1.25:1 | 22 | 3.050 | 4.21 | 3.820 |
| 700-2.250 | 2.100 - 2.400 | 1.25:1 | 22 | 2.530 | 3.69 | 3.300 |
| 700-2.450 | 2.300 - 2.600 | 1.25:1 | 22 | 2.280 | 3.44 | 3.050 |
| 700-2.850 | 2.700 - 3.000 | 1.25:1 | 22 | 2.010 | 3.17 | 2.780 |
| 700-3.950 | 3.700 - 4.200 | 1.25:1 | 22 | 1.430 | 2.59 | 2.200 |
| 700-4.700 | 4.400 - 5.000 | 1.25:1 | 22 | 1.180 | 2.34 | 1.950 |
| 700-5.700 | 5.400 - 6.000 | 1.25:1 | 22 | 0.964 | 2.12 | 1.734 |

Notes:

1. Insertion loss is 0.15 dB max; .1dB as a coupler with coherent signals
2. All units have a peak power rating of 5 kW.
3. 50 Ohm nominal impedance standard.
4. Operating temperature range is -55° C to +85° C.
5. DrawCom offers a 500W conduction cooled termination/load available for above models: Part # CTN-500

Combiners:VHF & UHF



DrawCom hybrid couplers or combiners are available in a wide range of frequencies, bandwidths and combining techniques. Power handling levels are available up to 400W per channel for combiners and a maximum input of 1.5kW for splitters.

- High power
- Good VSWR
- Low intermods
- High isolation
- Minimal space requirement
- Low loss

Selection Guide: Hybrid Couplers

| Part No. | 05-000103 (3 port) | 05-000102 (3 port) | 05-000101 (4 port) |
|---------------------------|--------------------|--------------------|--------------------|
| Frequency Range | 50 - 500 MHz | 50 - 500 MHz | 50 - 500 MHz |
| Bandwidth | $f_o \pm 10\%$ | $f_o \pm 10\%$ | $f_o \pm 10\%$ |
| Insertion Loss | <3.5dB | <3.5dB | <3.3dB |
| Return Loss (all ports) | >18dB | >17.7dB | >20dB |
| Isolation | >18dB | >18dB | >27dB |
| Power (Splitting) | 100W | 100W | 150W |
| Power (Coupling) per port | 10W | 25W | 100W |
| Environmental | IP64 | IP64 | IP64 |
| Temperature | -20 °C to + 55 °C | -20 °C to + 55 °C | -20 °C to + 55 °C |
| Connectors | N Female | N Female | N Female |

Selection Guide: VHF 3 Channel Wilkinson Combiners

| Part No. | 05-001401 | 05-001404 | 05-001405 | 05-001402 |
|---------------------------|-------------------|-------------------|-------------------|-------------------|
| Frequency Range | VHF Low band | VHF Low band | VHF High band | VHF |
| Bandwidth | $f_o \pm 10\%$ | $f_o \pm 10\%$ | $f_o \pm 10\%$ | $f_o \pm 10\%$ |
| Insertion Loss | <5.2dB | <5.2dB | <5.2dB | <5.2dB |
| Return Loss (all ports) | >17.7dB | >17.7dB | >17.7dB | >17.7dB |
| Isolation | >20dB | >20dB | >20dB | >20dB |
| Power (Splitting) | 100W | 100W | 100W | 100W |
| Power (Coupling) per port | 1W | 10W | 10W | 1W |
| Environmental | IP64 | IP64 | IP64 | IP64 |
| Temperature | -20 °C to + 55 °C | -20 °C to + 55 °C | -20 °C to + 55 °C | -20 °C to + 55 °C |
| Connectors | N Female | N Female | N Female | N Female |

Selection Guide: UHF 3 Channel Wilkinson Combiners

| Part No. | 05-001403 | 05-001406 |
|---------------------------|-------------------|-------------------|
| Frequency Range | UHF | UHF |
| Bandwidth | $f_o \pm 10\%$ | $f_o \pm 10\%$ |
| Insertion Loss | <5.2dB | <5.2dB |
| Return Loss (all ports) | >17.7dB | >17.7dB |
| Isolation | >20dB | >20dB |
| Power (Splitting) | 100W | 100W |
| Power (Coupling) per port | 1W | 10W |
| Environmental | IP64 | IP64 |
| Temperature | -20 °C to + 55 °C | -20 °C to + 55 °C |
| Connectors | N Female | N Female |