

PHASEMASTER®

PHASE STABLE CABLE ASSEMBLIES



UNMATCHED COMBINATION OF PHASE STABILITY, LOW LOSS, AND VALUE



Take a look at our **Phase Master®** cables.

Superior phase stability vs. temperature makes this cable the ideal choice for phase-sensitive applications—particularly those **with wide operating temperature ranges**.

Phase Master's enhanced phase stability—a result of a proprietary combination of high performance, tape wrapped PTFE dielectric and helically wrapped SPC shield—offers:

- Improved system performance
- Less frequent calibration
- More precise measurements

From environmental stress screening to electronically scanned radar systems, count on Phase Master® assemblies to provide **unparalleled value and performance**.

PhaseMaster® 096

1.513 dB/ft nom @ 50 GHz

PhaseMaster® 110

1.282 dB/ft nom @ 50 GHz

PhaseMaster® 130

0.959 dB/ft nom @ 50 GHz

PhaseMaster® 160

0.678 dB/ft nom @ 40 GHz

PhaseMaster® 190

0.496 dB/ft nom @ 32 GHz

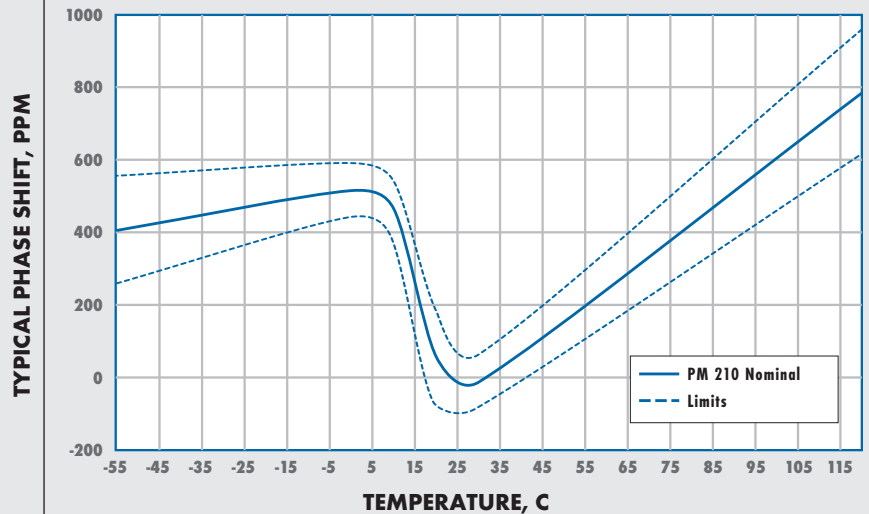
PhaseMaster® 210

0.367 dB/ft nom @ 26.5 GHz

PhaseMaster® 300

0.205 dB/ft nom @ 18 GHz

PHASE vs. TEMPERATURE – PHASE MASTER® 210 CABLE



**TELEDYNE
STORM MICROWAVE**
Everywhereyoulook™

High value microwave and
electronic interconnect solutions

www.teledynestorm.com

| SPECIFICATIONS | PHASEMASTER® | | |
|---|--|------------------|----------------|
| | 190 | 210 | 300 |
| Cable Designator | 63 | 62 | 61 |
| Diameter (in/mm) | 0.187/4.75 | 0.210/5.33 | 0.299 / 7.59 |
| Operating Frequency (Max, GHz) | 32 | 26.5 | 18 |
| Attenuation–Nom @ 2 GHz (dB/ft) | 0.112 | 0.092 | 0.062 |
| Attenuation–Nom @ 10 GHz (dB/ft) | 0.261 | 0.215 | 0.147 |
| Attenuation–Nom @ 18 GHz (dB/ft) | 0.359 | 0.296 | 0.205 |
| Attenuation–Nom @ 26.5 GHz (dB/ft) | 0.446 | 0.367 | – |
| Attenuation–Nom @ 32 GHz (dB/ft) | 0.496 | -- | -- |
| Attenuation–Nom @ 40 GHz (dB/ft) | -- | – | – |
| Attenuation–Nom @ 50 GHz (dB/ft) | -- | – | – |
| Power Handling -- Avg Power in Watts @ 1 GHz | 750 | 878 | 1615 |
| Phase Stability vs. Temp -- ppm (nom/tolerance) | –55°C | 445/150 | 410/150 |
| | +20°C | 35/100 | 60/125 |
| | +120°C | 800/125 | 790/175 |
| Phase Stability vs. Flexure† (@ 18 GHz, nom) | ±4° | ±4.5° | ±8° |
| Shielding Effectiveness–Min‡ (dB @ 1 GHz) | > –90 | > –90 | > –90 |
| Typical VSWR (2 straight connectors) | 1.25 to 32 GHz | 1.22 to 26.5 GHz | 1.22 to 18 GHz |
| Min Bend Radius (in/mm) | Static | 0.95/24.1 | 1.0/25.4 |
| | Dynamic | 1.9/48.3 | 2.0/50.8 |
| Connector Retention to 18 GHz, pull (lbs/kg) | 40/18.14 | 50/22.68 | 75/34.02 |
| Velocity of Propagation (%) | 82.4 | 84.0 | 84.6 |
| Weight (grams/ft & /m) | 16.65/54.63 | 19.40/63.65 | 39.00/127.95 |
| Operating Temperature Range (°C) | –55 to +125 (FEP jacket) –55 to +100 (LSZH jacket) | | |

† ± 360 degree bends around a 20 x cable OD mandrel. ‡ Subject to connector choice.

Specifications subject to change without notice.

PHASEMASTER® FEATURES & BENEFITS

FEATURES

- ~ Low density, low loss ePTFE dielectric
- ~ Helically wrapped SPC primary shield
- ~ Fully captivated connectors
- ~ Combination hex/knurl coupling nuts
- ~ Diameters of 0.096", 0.110", 0.127", 0.159", 0.187", 0.210" and 0.299"

ADVANTAGES

- ~ Reduced cable loss
- ~ Increased thermal stability
- ~ Reduced cable loss
- ~ Reduced leakage
- ~ Increased connector retention
- ~ Easier to tighten, while still able to torque
- ~ Sizes and frequencies to fit a wide range of applications

BENEFITS

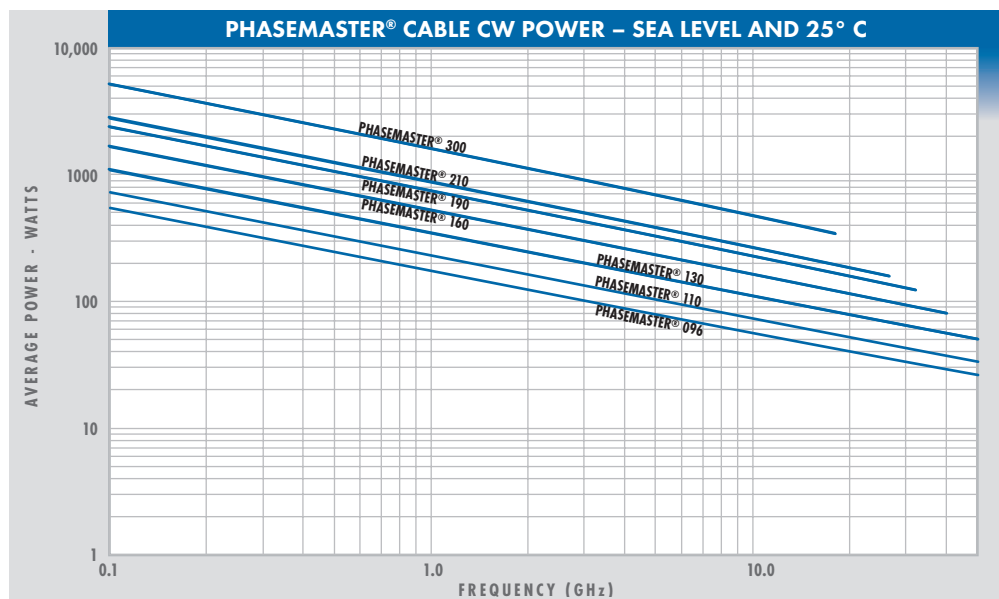
- ~ Meet challenging system gain or signal-to-noise requirements
- ~ Meet challenging system power or Mean Time Between Failures (MTBF) requirements
- ~ Meet challenging system gain or signal-to-noise requirements
- ~ Improved system performance
- ~ Reduced chance of degradation after install or use
- ~ Reduced fatigue, increased repeatability
- ~ Enhanced design-in options

| SPECIFICATIONS | | PHASEMASTER® | | | |
|---|---------|--------------------------|----------------|---------------------------|----------------|
| | | 096 | 110 | 130 | 160 |
| Cable Designator | | 66 | 65 | 68 | 64 |
| Diameter (in/mm) | | 0.096/2.44 | 0.110/2.79 | 0.127/3.23 | 0.159/4.04 |
| Operating Frequency (Max, GHz) | | 50 | 50 | 50 | 40 |
| Attenuation–Nom @ 2 GHz (dB/ft) | | 0.280 | 0.234 | 0.181 | 0.139 |
| Attenuation–Nom @ 10 GHz (dB/ft) | | 0.642 | 0.538 | 0.412 | 0.321 |
| Attenuation–Nom @ 18 GHz (dB/ft) | | 0.874 | 0.735 | 0.559 | 0.439 |
| Attenuation–Nom @ 26.5 GHz (dB/ft) | | 1.074 | 0.905 | 0.684 | 0.541 |
| Attenuation–Nom @ 32 GHz (dB/ft) | | 1.188 | 1.003 | 0.756 | 0.600 |
| Attenuation–Nom @ 40 GHz (dB/ft) | | 1.340 | 1.133 | 0.851 | 0.678 |
| Attenuation–Nom @ 50 GHz (dB/ft) | | 1.513 | 1.282 | 0.959 | – |
| Power Handling -- Avg Power in Watts @ 1 GHz | | 176 | 232 | 348 | 528 |
| Phase Stability vs. Temp -- ppm (nom/tolerance) | –55°C | 758/100 | 607/100 | 213/200 | 365/125 |
| | +20°C | 55/100 | -27/100 | -3/100 | 70/100 |
| | +120°C | 950/100 | 808/100 | 990/100* | 865/150 |
| Phase Stability vs. Flexure† (@ 18 GHz, nom) | | ±6.5° | ±4° | ±2.7° | ±3.5° |
| Shielding Effectiveness–Min‡ (dB @ 1 GHz) | | > –95 | > –95 | > –90 | > –90 |
| Typical VSWR (2 straight connectors) | | 1.30 to 50 GHz | 1.33 to 50 GHz | 1.35 to 50 GHz | 1.28 to 40 GHz |
| Min Bend Radius (in/mm) | Static | 0.50/12.7 | 0.50/12.7 | 0.625/15.9 | 0.75/19.1 |
| | Dynamic | 1.00/25.4 | 1.00/25.4 | 1.25/31.8 | 1.5/38.2 |
| Connector Retention to 18 GHz, pull (lbs/kg) | | 15/6.80 | 25/11.34 | 25/11.34 | 20/9.07 |
| Velocity of Propagation (%) | | 81.0 | 81.0 | 84.0 | 87.0 |
| Weight (grams/ft & /m) | | 4.83/15.85 | 6.77/22.21 | 9.24/30.31 | 12.12/39.76 |
| Operating Temperature Range (°C) | | –55 to +125 (FEP jacket) | | –55 to +100 (LSZH jacket) | |

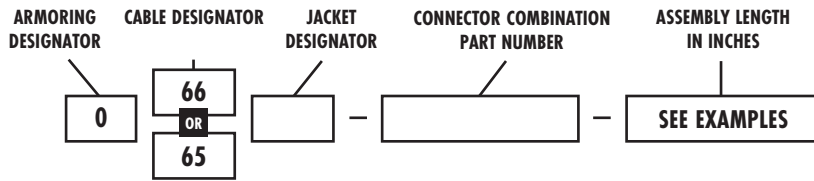
† ± 360 degree bends around a 20 x cable OD mandrel. ‡ Subject to connector choice.

Specifications subject to change without notice.

* PM 130 upper temp. shift @ +125°C



PHASEMASTER® ORDERING INFORMATION: Part Number Designation



Armoring Designator: 0 - Unarmored

Jacket Designator: Blank - Standard FEP **Z** - Low Smoke Zero Halogen (LSZH)

PHASEMASTER® 096

CONNECTOR OPERATING FREQUENCY

| CONNECTOR COMBINATION PART NUMBERS * | CONNECTOR OPERATING FREQUENCY | | | | | |
|--------------------------------------|-------------------------------|----------|-------------------|---------|-----------|------|
| | 18 GHz | 26.5 GHz | 40 GHz | | 50 GHz | |
| | SMA RAP | SMA SP | SMK (2.92 mm†) SP | SMK RAP | 2.4 mm SP | |
| 18 GHz | SMA RAP | 2121 | 0121 | 0521 | 2125 | 0621 |
| 26.5 GHz | SMA SP | 0121 | 0101 | 0105 | 0125 | 0106 |
| 40 GHz | SMK (2.92 mm†) SP | 0521 | 0105 | 0505 | 0525 | 0506 |
| | SMK RAP | 2125 | 0125 | 0525 | 2525 | 0625 |
| 50 GHz | 2.4 mm SP | 0621 | 0106 | 0506 | 0625 | 0606 |

| CONNECTOR CODES | |
|-----------------|------------------|
| SP | Straight Plug |
| RAP | Right-Angle Plug |

EXAMPLES:

066-0505-048 = Unarmored PhaseMaster® 096 with standard FEP jacket, SMK (2.92 mm) SP to SMK (2.92 mm) SP (assembly operates to 40 GHz), **48 inches**

066Z-0101-012 = Unarmored PhaseMaster® 096 with LSZH jacket, SMA SP to SMA SP (assembly operates to 26.5 GHz), **12 inches**

* Other connector styles available; consult Storm
† IEEE Standard 287

PHASEMASTER® 110

CONNECTOR OPERATING FREQUENCY

| CONNECTOR COMBINATION PART NUMBERS * | CONNECTOR OPERATING FREQUENCY | | | | | |
|--------------------------------------|-------------------------------|----------|-------------------|---------|-----------|------|
| | 18 GHz | 26.5 GHz | 40 GHz | | 50 GHz | |
| | SMA RAP | SMA SP | SMK (2.92 mm†) SP | SMK RAP | 2.4 mm SP | |
| 18 GHz | SMA RAP | 2121 | 0121 | 0521 | 2125 | 0621 |
| 26.5 GHz | SMA SP | 0121 | 0101 | 0105 | 0125 | 0106 |
| 40 GHz | SMK (2.92 mm†) SP | 0521 | 0105 | 0505 | 0525 | 0506 |
| | SMK RAP | 2125 | 0125 | 0525 | 2525 | 0625 |
| 50 GHz | 2.4 mm SP | 0621 | 0106 | 0506 | 0625 | 0606 |

| CONNECTOR CODES | |
|-----------------|------------------|
| SP | Straight Plug |
| RAP | Right-Angle Plug |

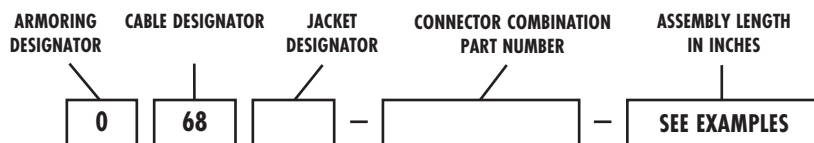
EXAMPLES:

065-0606-180 = Unarmored PhaseMaster® 110 with standard FEP jacket, 2.4 mm SP to 2.4 mm SP (assembly operates to 50 GHz), **180 inches**

065Z-0525-036 = Unarmored PhaseMaster® 110 with LSZH jacket, SMK (2.92 mm) SP to SMK RAP (assembly operates to 40 GHz), **36 inches**

* Other connector styles available; consult Storm
† IEEE Standard 287

PHASEMASTER® ORDERING INFORMATION: Part Number Designation



Armoring Designator: **0** - Unarmored **A** - Armored

Jacket Designator: **Blank** - Standard FEP **Z** - Low Smoke Zero Halogen (LSZH)

PHASEMASTER® 130

CONNECTOR OPERATING FREQUENCY

| CONNECTOR COMBINATION PART NUMBERS* | 26.5 GHz | | 40 GHz | | 50 GHz | |
|-------------------------------------|-------------------|-------------------|-------------------|-----------|-----------|------|
| | SMA SP | SMK (2.92 mm†) SP | SMK (2.92 mm†) SJ | 2.4 mm SP | 2.4 mm SJ | |
| 26.5 GHz | SMA SP | 0101 | 0105 | 0115 | 0106 | 0116 |
| 40 GHz | SMK (2.92 mm†) SP | 0105 | 0505 | 0515 | 0506 | 0516 |
| | SMK (2.92 mm†) SJ | 0115 | 0515 | 1515 | 0615 | 1516 |
| 50 GHz | 2.4 mm SP | 0106 | 0506 | 0615 | 0606 | 0616 |
| | 2.4 mm SJ | 0116 | 0516 | 1516 | 0616 | 1616 |

| CONNECTOR CODES | |
|-----------------|---------------|
| SP | Straight Plug |
| SJ | Straight Jack |

EXAMPLES:

068-0606-048 = Unarmored PhaseMaster®130 with standard FEP jacket, 2.4 mm SP to 2.4 mm SP (assembly operates to 50 GHz), 48 inches

068Z-0115-150 = Unarmored PhaseMaster®130 with LSZH jacket, SMA SP to SMK (2.92 mm†) SJ (assembly operates to 26.5 GHz), 150 inches

* OTHER CONNECTOR STYLES AVAILABLE; CONSULT STORM

† IEEE STANDARD 287

PHASEMASTER® 130 CABLE CONSTRUCTION



A Silver-plated copper center conductor

B Expanded PTFE dielectric

C Helically wrapped SPC flat wire shield

D PTFE

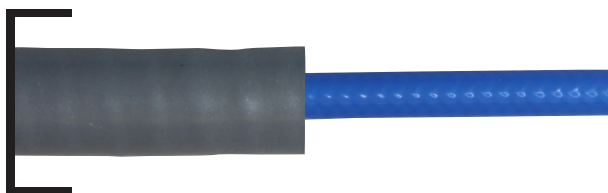
E Silver-plated copper braid

F Extruded blue FEP jacket standard; blue LSZH (low smoke zero halogen) jacket on request

ARMORING OPTION FOR PHASEMASTER® 130

ARMORED

Armoring Designator: **A**

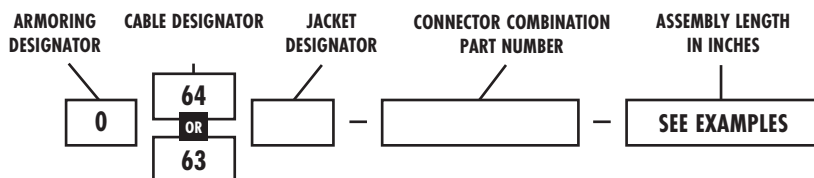


Design for both inside and outside environments where the application requires more cut and crush resistance. This armor option is extremely flexible and light while still providing protection. The cable is covered with a stainless steel flat wire spiral, fiberglass braid, and silicone jacket.

Temperature: -55° C thru +125° C

Diameter: 0.276"/7.00 mm

PhaseMaster® ORDERING INFORMATION: Part Number Designation



Armoring Designator†: **0** - Unarmored **A** - Hard Armored (polyolefin jacket)
AN - Hard Armored (no polyolefin jacket)

† Hard armoring with FFRA connectors is a custom part number; call Storm.

Jacket Designator: **Blank** - Standard FEP **Z** - Low Smoke Zero Halogen (LSZH)

PHASEMASTER® 160

| | | CONNECTOR OPERATING FREQUENCY | | | | | | | |
|-------------------------------------|-----------------------------------|-------------------------------|-----------|---------|-----------|--------------------------------|-----------------------------------|-----------|--------------|
| | | 26.5 GHz | | | | 40 GHz | | | |
| CONNECTOR COMBINATION PART NUMBERS* | | 3.5 mm SP | SMA SP | SMA RAP | SMA FFRAP | SMK (2.92 mm [†]) SP | SMK (2.92 mm [†]) FFRAP | 2.4 mm SP | 2.4 mm FFRAP |
| | | 26.5 GHz | 3.5 mm SP | 0404 | 0104 | 0421 | 0451 | 0405 | 0455 |
| SMA SP | 0104 | | 0101 | 0121 | 0151 | 0105 | 0155 | 0106 | 0156 |
| SMA RAP | 0421 | | 0121 | 2121 | 2151 | 0521 | 2155 | 0621 | 2156 |
| SMA FFRAP | 0451 | | 0151 | 2151 | 5151 | 0551 | 5155 | 0651 | 5156 |
| 40 GHz | SMK (2.92 mm [†]) SP | 0405 | 0105 | 0521 | 0551 | 0505 | 0555 | 0506 | 0556 |
| | SMK (2.92 mm [†]) FFRAP | 0455 | 0155 | 2155 | 5155 | 0555 | 5555 | 0655 | 5556 |
| | 2.4 mm SP | 0406 | 0106 | 0621 | 0651 | 0506 | 0655 | 0606 | 0656 |
| | 2.4 mm FFRAP | 0456 | 0156 | 2156 | 5156 | 0556 | 5556 | 0656 | 5656 |

* Other connector styles available; consult Storm

† IEEE Standard 287

| CONNECTOR CODES | |
|-----------------|---------------------------------|
| SP | Straight Plug |
| RAP | Right-Angle Plug |
| FFRAP | Factory Formed Right-Angle Plug |

EXAMPLES:

064-0505-048 = Unarmored PhaseMaster® 160 with standard FEP jacket, SMK (2.92 mm) SP to SMK (2.92 mm) SP (assembly operates to 40 GHz), 48 inches

AN64Z-0606-180 = Hard Armored (no polyolefin jacket) PhaseMaster® 160 with LSZH jacket, 2.4 mm SP to 2.4 mm SP (assembly operates to 40 GHz), 180 inches

PHASEMASTER® 190

| | | CONNECTOR OPERATING FREQUENCY | | | | | | | |
|-------------------------------------|-----------------------------------|-------------------------------|--------|-----------|-----------|--------------------------------|--------------------------------|-----------------------------------|------|
| | | 18 GHz | | 26.5 GHz | | 32 GHz | | | |
| CONNECTOR COMBINATION PART NUMBERS* | | SMA SP | SMA SJ | 3.5 mm SP | 3.5 mm SJ | SMK (2.92 mm [†]) SP | SMK (2.92 mm [†]) SJ | SMK (2.92 mm [†]) FFRAP | |
| | | 18 GHz | SMA SP | 0101 | 0111 | 0104 | 0114 | 0105 | 0115 |
| SMA SJ | 0111 | | 1111 | 0411 | 1115 | 0511 | 1115 | 1155 | |
| 26.5 GHz | 3.5 mm SP | 0104 | 0411 | 0404 | 0414 | 0405 | 0415 | 0455 | |
| | 3.5 mm SJ | 0114 | 1115 | 0414 | 1414 | 0514 | 1415 | 1455 | |
| 32 GHz | SMK (2.92 mm [†]) SP | 0105 | 0511 | 0405 | 0514 | 0505 | 0515 | 0555 | |
| | SMK (2.92 mm [†]) SJ | 0115 | 1115 | 0415 | 1415 | 0515 | 1515 | 1555 | |
| | SMK (2.92 mm [†]) FFRAP | 0155 | 1155 | 0455 | 1455 | 0555 | 1555 | 5555 | |
| | | | | | | | | | |

* Other connector styles available; consult Storm

† IEEE Standard 287

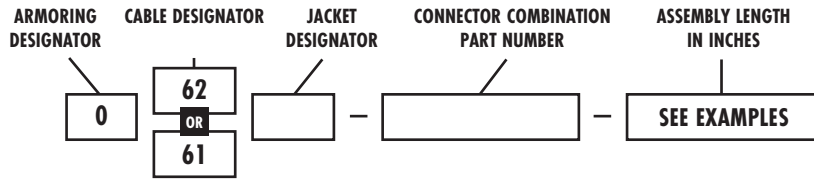
| CONNECTOR CODES | |
|-----------------|---------------------------------|
| SP | Straight Plug |
| SJ | Straight Jack |
| FFRAP | Factory Formed Right-Angle Plug |

EXAMPLES:

063-5555-048 = Unarmored PhaseMaster® 190 with standard FEP jacket, 2.92 mm FFRAP to 2.92 mm FFRAP (assembly operates to 32 GHz), 48 inches

A63Z-0505-180 = Hard Armored (polyolefin jacket) PhaseMaster® 190 with LSZH jacket, 2.92 mm SP to 2.92 mm SP (assembly operates to 32 GHz), 180 inches

PhaseMaster® ORDERING INFORMATION: Part Number Designation



Armoring Designator†: **O** - Unarmored **R** - Ruggedized (polyurethane jacket)
A - Hard Armored (polyolefin jacket) **AN** - Hard Armored (no polyolefin jacket)

† Hard armoring with FFRA connectors is a custom part number; call Storm.
 Ruggedizing not available with FFRA connectors.

Jacket Designator: **Blank** - Standard FEP **Z** - Low Smoke Zero Halogen (LSZH)

PHASEMASTER® 210

CONNECTOR COMBINATION PART NUMBERS*

| | | 26.5 GHz | | | | 18 GHz | | | | | | | |
|----------|--------------|-----------|--------------|--------|--------|---------|-----------|--------|-----------|------|---------|--|--|
| | | 3.5 mm SP | 3.5 mm FFRAP | SMA SP | SMA SP | SMA RAP | SMA FFRAP | TNC SP | TNC FFRAP | N SP | N FFRAP | | |
| 26.5 GHz | 3.5 mm SP | 0404 | 0454 | 0441 | 0104 | 0421 | 0451 | 0204 | 0452 | 0304 | 0453 | | |
| | 3.5 mm FFRAP | 0454 | 5454 | 4154 | 0154 | 2154 | 5154 | 0254 | 5254 | 0354 | 5354 | | |
| | SMA SP | 0441 | 4154 | 4141 | 0141 | 2141 | 4151 | 0241 | 4152 | 0341 | 4153 | | |
| 18 GHz | SMA SP | 0104 | 0154 | 0141 | 0101 | 0121 | 0151 | 0102 | 0152 | 0103 | 0153 | | |
| | SMA RAP | 0421 | 2154 | 2141 | 0121 | 2121 | 2151 | 0221 | 2152 | 0321 | 2153 | | |
| | SMA FFRAP | 0451 | 5154 | 4151 | 0151 | 2151 | 5151 | 0251 | 5152 | 0351 | 5153 | | |
| | TNC SP | 0204 | 0254 | 0241 | 0102 | 0221 | 0251 | 0202 | 0252 | 0203 | 0253 | | |
| | TNC FFRAP | 0452 | 5254 | 4152 | 0152 | 2152 | 5152 | 0252 | 5252 | 0352 | 5253 | | |
| | N SP | 0304 | 0354 | 0341 | 0103 | 0321 | 0351 | 0203 | 0352 | 0303 | 0353 | | |
| N FFRAP | 0453 | 5354 | 4153 | 0153 | 2153 | 5153 | 0253 | 5253 | 0353 | 5353 | | | |

* Other connector styles available; consult Storm

| CONNECTOR CODES | |
|-----------------|---------------------------------|
| SP | Straight Plug |
| RAP | Right-Angle Plug |
| FFRAP | Factory Formed Right-Angle Plug |

EXAMPLES:

062-0404-048 = Unarmored PhaseMaster® 210 with standard FEP jacket, 3.5 mm SP to 3.5 mm SP (assembly operates to 26.5 GHz), 48 inches

R62Z-4141-120 = Ruggedized PhaseMaster® 210 with LSZH jacket, SMA SP to SMA SP (assembly operates to 26.5 GHz), 120 inches

PHASEMASTER® 300

CONNECTOR COMBINATION PART NUMBERS*

| | | 18 GHz | | | | | |
|--------|-----------|--------|-----------|--------|-----------|------|---------|
| | | SMA SP | SMA FFRAP | TNC SP | TNC FFRAP | N SP | N FFRAP |
| 18 GHz | SMA SP | 0101 | 0151 | 0102 | 0152 | 0103 | 0153 |
| | SMA FFRAP | 0151 | 5151 | 0251 | 5152 | 0351 | 5153 |
| | TNC SP | 0102 | 0251 | 0202 | 0252 | 0203 | 0253 |
| | TNC FFRAP | 0152 | 5152 | 0252 | 5252 | 0352 | 5253 |
| | N SP | 0103 | 0351 | 0203 | 0352 | 0303 | 0353 |
| | N FFRAP | 0153 | 5153 | 0253 | 5253 | 0353 | 5353 |

* Other connector styles available; consult Storm

| CONNECTOR CODES | |
|-----------------|---------------------------------|
| SP | Straight Plug |
| FFRAP | Factory Formed Right-Angle Plug |

EXAMPLES:

061-0303-036 = Unarmored PhaseMaster® 300 with standard FEP jacket, N SP to N SP (assembly operates to 18 GHz), 36 inches

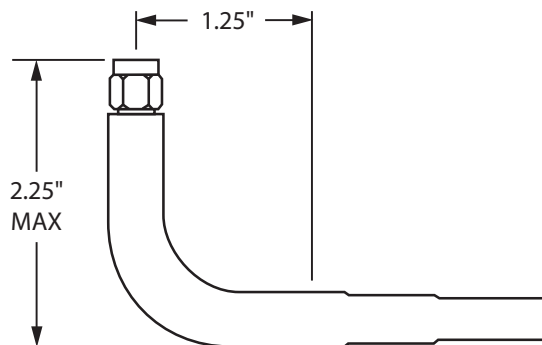
AN61Z-0101-108 = Hard Armored (no polyolefin jacket) PhaseMaster® 300 with LSZH jacket, SMA SP to SMA SP (assembly operates to 18 GHz), 108 inches

FACTORY FORMED RIGHT-ANGLE (FFRA) CONNECTORS

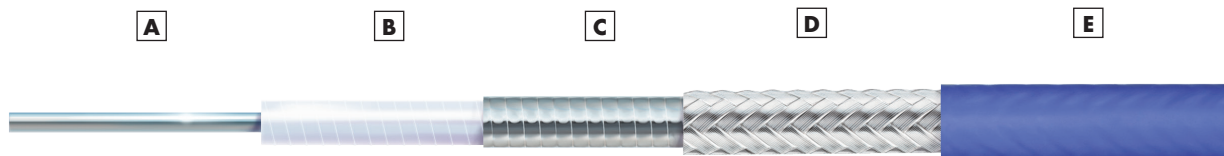
Designed using straight connectors and a shrink tubing–strain relief combination, FFRA connectors offer a moderate right-angle space advantage at a significant cost savings over traditional right-angle connectors.

FFRA connectors are available for most PhaseMaster® cable sizes. See the Connector tables for specific connectors available as FFRA's.

Note: The dimensions given here are for PM160 with an SMK connector. Larger cables will have proportionally larger dimensions. Contact Storm for specifics.



PhaseMaster® CABLE CONSTRUCTION



- A** Silver-plated copper center conductor
- B** Expanded PTFE dielectric
- C** Helically wrapped SPC flat wire shield
- D** Silver-plated copper braid
- E** Extruded blue FEP jacket standard; blue LSZH (low smoke zero halogen) jacket on request

ARMORING & RUGGEDIZING OPTIONS

The Hard Armored option (with and without polyolefin jacket) is available for PhaseMaster® 160, 190, 210, and 300 cables. And, when specifying FFRAP connectors, custom part numbering must be used. Call Storm for details.

The Ruggedized option (with polyurethane jacket) is available for PhaseMaster® 210 and 300 cables, but not with FFRAP connectors.

HARD ARMORED – Polyolefin jacket

Armoring Designator: **A**



Designed for both inside and outside environments where flexibility and weight are not as critical, but where the application requires the ultimate in cut and crush resistance (500 lbs/in). The cable is covered with a stainless steel interlocked armor and a cross-linked polyolefin jacket.

Temperature: -55° C thru +125° C

Diameter: PhaseMaster® 160 – 0.300"/7.62 mm
PhaseMaster® 190 – 0.430"/10.92 mm
PhaseMaster® 210 – 0.430"/10.92 mm
PhaseMaster® 300 – 0.525"/13.34 mm

HARD ARMORED – No polyolefin jacket

Armoring Designator: **AN**



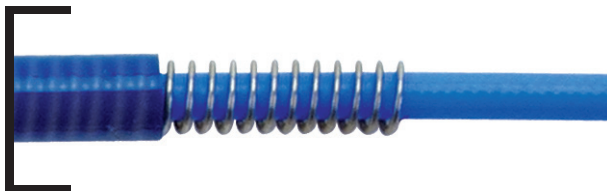
Designed for both inside and outside environments where flexibility and weight are not as critical, but where the application requires the ultimate in cut and crush resistance (500 lbs/in). The cable is covered with a stainless steel interlocked armor.

Temperature: -55° C thru +125° C

Diameter: PhaseMaster® 160 – 0.265"/6.73 mm
PhaseMaster® 190 – 0.395"/10.03 mm
PhaseMaster® 210 – 0.395"/10.03 mm
PhaseMaster® 300 – 0.475"/12.07 mm

RUGGEDIZED – Polyurethane jacket

Armoring Designator: **R**



For applications similar to the above, where weight, flexibility, and moderate compression resistance (300 lbs/in) are important, but where abrasion resistance is also critical. The cable is covered with a flexible wound helix of passivated stainless steel wire and an extruded polyurethane jacket.

Temperature: -55° C thru +100° C

Diameter: PhaseMaster® 210 – 0.348"/8.84 mm
PhaseMaster® 300 – 0.454"/11.53 mm