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Barth Electronics, Inc.



High
Voltage
Measurement
Instrumentation



Pulse Addendum 09



BARTH ELECTRONICS, INC.
PULSE ADDENDUM 09
Revised 02/09/09

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HIGH VOLTAGE RESISTIVE SIGNAL/TRIGGER TAP OFF

DESCRIPTION

Barth High Voltage Resistive Signal Tap Offs are useful for signal monitoring or device triggering. They are constructed using our voltage probes incorporated into a unit with connectors to allow easy insertion into a coaxial system. This arrangement is very useful in a laboratory setup, and for system monitoring.

HIGH VOLTAGE RESISTIVE SIGNAL/TRIGGER TAP OFF COMPARISON

	Maximum	Input				
Model	Maximum Peak Voltage	@ Pulse width ns	Risetime through mainline ps	Voltage Ratio Tap Off	Risetime of Resistive Output	Connectors
241-NMFFP-11	2,500	400	< 30	11:1	<60ps	N male/female mainline
245-NMFFP-100	2,500	400	< 30	100:1	<60ps	N female tap off
242-GLBFP-100	5,000	400	< 30	100:1	<900ps	GR874 locking mainline/BNC female tap off
242-GLBFP-50	5,000	400	< 30	50:1	<400ps	GR874 locking mainline/BNC female tap off
242-GLBFP-25	5,000	400	< 30	25:1	<215ps	GR874 locking mainline/BNC female tap off
243-HMFNFP-100	15,000	2 μ S	< 30	100:1	<1.5ns	*HNB male/female

NOTE:

* Our type HN (HNB) connectors are specially designed to obtain minimum reflection coefficient for fast risetimes. For best pulse response, our Model 401-HNB male or Model 402-HNB female cable connector for RG214/U coax should be used for interconnection.

HIGH VOLTAGE RESISTIVE SIGNAL/TRIGGER TAP OFF

MODEL 241 -NMFFP-11, MODEL 245-NMFFP-100

ADVANTAGES

- High Voltage Pulse rated
- N mainline and tap off connectors
- Wide bandwidth

DESCRIPTION

A High Voltage resistive signal tap off useful for signal monitoring or device triggering.



Model 241-NMFFP-11

SPECIFICATIONS

Voltage Ratio:	241-xxx-11	1:1 mainline, into a 50 Ω load 11:1 tap off, into a 50 Ω load
	245-xxx-100	1:1 mainline, into a 50 Ω load 100:1 tap off, into a 50 Ω load
Maximum Input:		2.5kV @ 400ns rectangular pulse on mainline*
Peak Input Power:		125kW at rated pulse width
Average Input Power:		1W maximum
Mainline Risetime:		< 30ps
Tap Off Risetime:	241-xxx-11	< 60ps
	245-xxx-100	< 60ps
Bandwidth (-3dB):	241-xxx-11	Tap off 5GHz, mainline 10GHz
	245-xxx-100	Tap off 5GHz, mainline 10GHz
Impedance:	241-xxx-11	50 Ω with 450 Ω tap off
	245-xxx-100	50 Ω with 4950 Ω tap off
Voltage Coefficient:		< 1% at rated voltage
Connectors:	245-NMFFP-xxx	Mainline N male/female
	241-NMFFP-xxx	Tap off output N female
	241-GLNFP-xx	Mainline GR 874 Locking Tap off Output N female
Dimensions:		Approx. 3 9/16" wide (9.1 cm) x 2 3/8" high (6.0 cm) x 3/4" deep (1.9 cm)
Weight:		1/2 lb.

Other configurations-voltage ratio/tap off can be obtained. User must specify desired tap off voltage ratio or resistance value, voltage, and risetime requirements. BNC female is optionally available for tap off connector. The risetime and voltage specifications are dependent on, and in some cases limited by, the resistance value selected.

***Maximum rating requires mainline be terminated into 50 Ω .**

HIGH VOLTAGE RESISTIVE SIGNAL/TRIGGER TAP OFF

MODEL 242-SPJBFP-25, 50, 100, MODEL 242-GLBFP-25, 50, 100

Model 242-SPJBFP-50



Model 242-GLBFP-100



DESCRIPTION

A High Voltage resistive signal tap off useful for signal monitoring or device triggering on a coaxial cable system.

SPECIFICATIONS

Voltage Ratio:	242-XXXXX-25	1:1 mainline, into a 50 Ω load
	242-XXXXX-50	25/1 (27.96dB) into a 50 Ω load
	242-XXXXX-100	50/1 (33.98dB) into a 50 Ω load
		100/1 (40dB) into a 50 Ω load
Maximum input:		5kV, 400ns FWHM Pulse*
Peak/Average Input Power:		500kW at rated pulse width* 1W maximum*
Impedance:	242-XXXXX-25	50 Ω with 1200 Ω tap off
	242-XXXXX-50	50 Ω with 2450 Ω tap off
	242-XXXXX-100	50 Ω with 4950 Ω tap off
Mainline Risetime:		< 30ps
Tap Off Risetime/ Bandwidth (-3db):	242-XXXXX-25	< 215ps 1.6GHz
	242-XXXXX-50	< 400ps 870 MHz
	242-XXXXX-100	< 900ps 450MHz
Voltage Coefficient:		< 1% at rated voltage
Reflection-TDR:		< 3% to a 100ps risetime step function
Connectors:	242-GLBFP-XX	Mainline GR 874 locking, N male/female, HN male/female - BNC Tap Off
	242-SPJBFP-XX	Mainline SHV Plug/SHV Jack, GHV male/female - BNC Tap Off
Dimensions:	242-GLBFP-XX	Approx. 3.6 long x 2.2" wide x 1" high
	242-SPJBFP-XX	Approx. 5.6" long x 2.25" wide x .78" high
Weight:	242-GLBFP-XX	Approx. 5 oz.
	242-SPJBFP-XX	Approx. 8 oz.

*Maximum rating requires mainline be terminated into 50 Ω .

HIGH VOLTAGE RESISTIVE SIGNAL/TRIGGER TAP OFF

MODEL 243-HMFNFP-100

ADVANTAGES

- High Voltage Pulse Rated
- HN Mainline Connectors

DESCRIPTION

A High Voltage resistive signal tap off useful for signal monitoring or device triggering.

SPECIFICATIONS

Voltage Ratio: 1:1 mainline, into a 50 Ω load
100:1 (40dB) tap off, into a 50 Ω load

Maximum Input: 15kV, 2 μ s FWHM Pulse *

Peak Input Power: 4.5MW at rated pulse width *

Average Input Power: 1W maximum *

Mainline Risetime: < 30ps

Tap Off risetime: < 1.5ns

Bandwidth (-3dB): Tap off 250 MHz, Mainline 10 GHz

Impedance: 50 Ω with 5k Ω tap off
(This provides 1/100 of the amplitude of the main line voltage on the sampled signal output connector)

Voltage Coefficient: < 1% at rated voltage

Connectors: Mainline HN male/female *
Tap off output N female

Dimensions: Approx. 3 3/4" (9.5 cm) wide x 3" (7.6 cm) high x 3/4" (1.9 cm) deep

Weight: Approx. 5/8 lb.

NOTE:

Our type HN (HNB) connectors are specially designed to obtain minimum reflection coefficient for fast risetimes. For best pulse response, our Model 401-HNB male or Model 402-HNB female cable connector for RG214/U coax should be used for interconnection, available in our Pulse Catalog.

Other configurations-voltage ratio/tap off can be obtained. User must specify desired tap off voltage ratio or resistance value, voltage and risetime requirements, and desired sampled signal output connector. N female and BNC female are currently available. The risetime and voltage specifications are dependent on, and in some cases limited by, the resistance value selected.

***Maximum rating requires mainline be terminated into 50 Ω .**



Model 243-HMFNFP-100

WIDE BAND HIGH VOLTAGE TRANSFORMER

TRANSFORMER COMPONENT MODEL COMPARISON

SIGNAL PICKOFFS

Model	Maximum Peak Voltage	Maximum Energy without saturation	Input Reflection coefficient at 100ps τ	Risetime through unit mainline ps	Risetime of coupled Output ps	Connectors
CT5-GLP	5,000	800Vx μ s	< 5%	< 70	350	GR 874 locking
CT5-GLBFIP	5,000	800Vx μ s	< 5%	< 70	350	GR 874 locking Mainline/BNC female isolated
CT6-NFP-8	4,000	135Vx μ s	< 5%	< 70	< 300	N female
CT20B-HFNFP-20	15,000	1,300Vx μ s	< 5%	< 70	<170	*HN female mainline/N female output
CT20B-HFNFP-8	15,000	135Vx μ s	< 5%	< 70	300	*HN female mainline/N female output

NOTE: Input Reflection Coefficient rated at 500 ps τ

* Our type HN (HNB) connectors are specially designed to obtain minimum reflection coefficient for fast risetimes. For best pulse response, our Model 401-HNB connector or Model 402-HNB female cable for RG214/U coax should be used for interconnection.



WIDE BAND HIGH VOLTAGE TRANSFORMER

MODEL CT5-GLP, CT5-GLBFIP

DESCRIPTION

High Voltage 50 Ω Transformer Coupled Signal Pickoff

SPECIFICATIONS

Voltage Ratio:	10.0/1	Model CT5-GLBFIP
Maximum input:	5kV, 800V \times μ s Pulse	
Impedance:	50 Ω	
Mainline Risetime:	< 70ps	
Tap Off Risetime:	< 350ps	
Droop:	< 5% at 1 μ s	
Bandwidth (-3dB):	Mainline 5GHz, tap off 1GHz	
Reflection-TD R:	< 5% to a 100ps risetime step function	
Connectors:	CT5-GLP GR 874 locking CT5-GLBFIP GR 874 locking mainline, BNC female isolated output	
Dimensions:	4" long x 3.150" wide x 1" high	
Weight:	5/8 lb.	



WIDE BAND HIGH VOLTAGE TRANSFORMER

MODEL CT6-NFP-8

DESCRIPTION

Transformer Coupled Signal Pickoff without direct connection to main transmission line



Model CT6-NFP-8

SPECIFICATIONS

Voltage Ratio:	8.0 + 10%, 2ns after 50% amplitude
Maximum Input:	4kV, 135Vx μ s Pulse
Impedance:	50 Ω
Mainline Risetime:	< 70ps
Tap Off Risetime:	< 300ps
Bandwidth (-3dB):	Mainline 5GHz, tap off 1.2GHz
Reflection-TDR:	< 5% to a 100ps risetime step function
Connectors:	N female
Dimensions:	2.8" long x 2.5" wide x 1" high
Weight:	1/2 lb.

WIDE BAND HIGH VOLTAGE TRANSFORMER

MODEL CT20B-HFNFP-20, MODEL CT20B-HFNFP-8

DESCRIPTION

High Voltage Transformer Coupled Signal Pickoff without direct connection to main transmission line.



Model CT20B-HFMNFP-20

SPECIFICATIONS

Voltage Ratio:	CT20B-HFNFP-20	20.0/1 Vr
	CT20B-HFNFP-8	8.0/1 Vr
Maximum Input:	CT20B-HFNFP-20	15kV, 1300Vxμs Pulse
	CT20B-HFNFP-8	15kV, 135Vxμs Pulse
Impedance:		50 Ω
Mainline Risetime:		< 70ps
Tap Off Risetime:	CT20B-HFNFP-20	< 170ps
	CT20B-HFNFP-8	< 300ps
Bandwidth (-3dB):	CT20B-HFNFP-20	Mainline 5GHZ, tap off 2GHZ
	CT20B-HFNFP-8	Mainline 5GHZ, tap off 1.2GHZ
Reflection-TDR:		< 5% to a 100ps risetime step function
Connectors:		HN female mainline *, N female tap off output **
Dimensions:		3" long x 3.3" wide x 1.5" high
Weight:		1 lb.

NOTE:

* Our type HN (HNB) connectors are specially designed to obtain minimum reflection coefficient for fast risetimes. For best pulse response, our Model 401-HNB male or Model 402-HNB female cable connector for RG214/U coax should be used for interconnection, available in our Pulse Catalog. Unit is supplied with a Barth Model 404-HMM low reflection male to male adapter, so that either the input or output can be adapted to a male connection.

** BNC female tap off output is optionally available.

Wide Band High Voltage Resistive Voltage Tap Off and Resistive Current Monitor

MODEL CV1A



Model CV1A Current and Voltage Probe

ADVANTAGES

- Highest speed coaxial current sensor for time domain measurements
- Flat pulse response extending to microseconds
- Clean Response

DESCRIPTION

Precision Coaxial Current Sensor, a completely new design providing precise current measurements from sub-nanosecond to microseconds. This complementary voltage and current probe can provide precise measurements of incident and reflected energy for time domain pulses as fast as 30 picoseconds. The CV1A is a combination voltage, tap off, and current monitor. This product presently covers the tremendously wide measurement range of 3×10^5 , which can be extended.

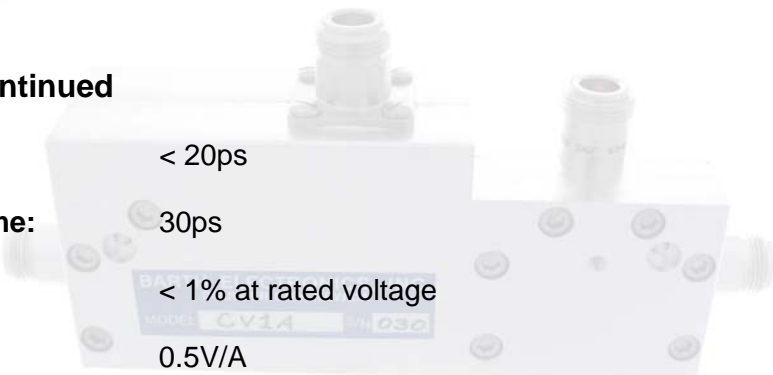
SPECIFICATIONS

Voltage Ratio:	100:1 tap off, into 50 Ω load
Current Ratio:	.5 Volt/Amp
Maximum Input:	2.5kV @ 400ns* rectangular pulse on mainline
Peak Input Power:	125kW at rated pulse width
Average Input Power:	100W maximum*

Wide Band High Voltage Resistive Voltage Tap Off and Resistive Current Monitor

MODEL CV1A

SPECIFICATIONS Continued



Mainline Risetime:	< 20ps
Voltage Tap Off Risetime:	30ps
Voltage Coefficient:	< 1% at rated voltage
Volts/Amp:	0.5V/A
Droop:	1% in 1 μ s
Tap Off Risetime:	< 30ps
Maximum Current:	300A
Average power:	100 watts
Connectors:	Mainline N male/female Tap off N female
Dimensions:	Approx. 6.8" w (17.3cm) x 2.9" h (7.3cm) x 1.5" d (3.8cm)
Weight:	1.6lb. (.72kg)

Other configurations-voltage ratio/tap off can be supplied. User must specify voltage ratio, current ratio, voltage, and risetime requirements. The risetime and voltage specifications are dependent on, and in some cases limited by, the resistance sensitivities selected.

***Maximum rating requires mainline be terminated into 50 Ω .**

ORDERING INFORMATION

BUSINESS HOURS:

We are located in Boulder City, NV, USA in the Pacific Time zone. Our business hours are 8:00 a.m. to 5:00 p.m. Monday through Friday.

TERMS:

Prices and discounts are subject to change without notice. Specifications for any product may be improved at any time without notice. Major improvements in a specification usually add a letter to the original part number.

Domestic Terms are Net 20 days. International Terms are Net 30 days. Accounts over 20 days are past due and will receive a finance charge of 0.05% per day (18 % per Annum). All prices are F.O.B. Boulder City, Nevada. We provide commercial packaging for shipment.

CONDITIONS OF SALE:

Determination of price, terms, conditions of sale, and final acceptance of orders are made at the factory in Boulder City, Nevada.

DOMESTIC SHIPPING / RUSH ORDERS:

Products in stock are available for immediate delivery. Every effort is made to stock the most popular items. Delivery for a product not in-stock is dependent upon our production schedule.

EXPORT TERMS / SHIPPING:

The "end-use" and "customer name" for exported products must be included with all confirming purchase orders. Export orders may require a letter of credit before shipment is made. If an export license is required, it will take approximately three weeks to ship the order.

CREDIT CARDS:

Barth Electronics, Inc. accepts VISA, Discover and Master Card. Maximum credit card charge is \$20,000.00 USD, per transaction.



DISCOUNTS:

Discounts for quantities are available. Call factory for quantity discount pricing.

QUALITY:

We at Barth Electronics stand behind every high quality product we manufacture. Our commitment to quality and workmanship are among the highest in the world. Quality does cost and all high voltage pulse power items produced by Barth Electronics Inc. are buy it once use it forever, when used within catalog specifications.

SALES INQUIRIES:

To contact our sales team email beisales@barthelectronics.com , or call 1-702-293-1576

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Update: January 2009



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