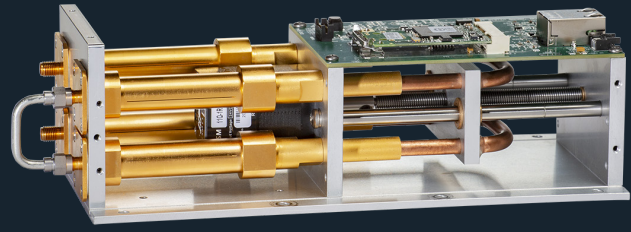


XT-100-OEM

Programmable Delay Line Instrument



XT-100 Trombone offers precision and range in embedded OEM application systems and test sets.

Recommended when you need the capabilities of the XT-100 integrated into your own system

Overview

The Colby Instruments X Series instruments offer wideband electrical signal delay (phase shift) with industry leading resolution and precision programmable control in one easy to setup and use instrument. All X Series instruments are completely passive and are DC-coupled with signal input bandwidth to 18.0 GHz. Easily automate RF/high frequency phase shift with precision programmable control and high-precision accurate delay.

The Model XT-100-OEM is our electromechanical trombone delay line enclosure for OEM applications where space requirements are limited.

Features/Benefits

- Programmable delay
- Phase shift RF/microwave signals with precise, repeatable, and accurate delay
- Signal input frequency range from DC to 18.0 GHz
- Resolution to 0.50 ps per step, 0.18° per 1.0 GHz
- Proven reliability, accuracy, and repeatability
- Easily automate or replace manual processes
- Ethernet TCP/IP and RS-232 protocols supported for full instrument control
- Requires +24V at 250 ma and +5V at 500 ma
- For OEM applications with limited space requirements
- Approx. 9 1/2" D x 4" W x 2 3/4" H enclosure
- ROHS Compatible

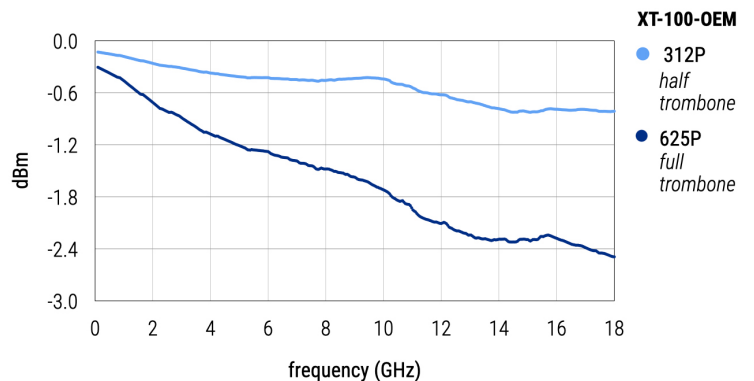
Architecture

The basic architecture of the XT-100-OEM incorporates two equal length mechanical trombone delay line structures (or channels) which are stacked on top of each other to fit into a compact enclosure. It uses quarter-inch, semi-rigid coaxial cables to minimize losses. The most critical design element centers on the low-friction interfaces of the moving parts of the trombone structure to achieve a long lifetime of operation. The patented design has an outstanding proven operational lifetime and a recommended service interval of 500,000 operations. A highly efficient hybrid stepper motor design with a precision lead screw assembly allows accurate positioning in 0.25 ps steps for each half structure or channel.

Delay Range

Programmable Delay range in series-connected operation is from 0 to 625.0 ps and step precision to 0.50 ps. Total range can be halved from 0 to 312.50 ps with step precision doubled to 0.25 ps per step (or 0.09° per 1 GHz) when operating in parallel-connected operation.

Typical insertion loss for XT-100-OEM configuration at max delay

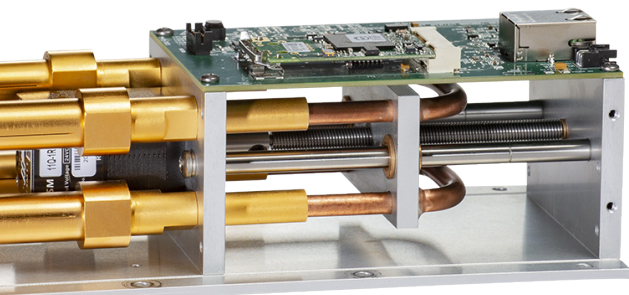


Control

Instrument control is via Ethernet TCP/IP and RS-232 interfaces. Power requirements are +24V DC (250 ma) for stepper motor and +5V DC (500 ma) for system controller board. The XT-100-OEM is housed in a shielded and enclosed aluminum assembly.

Options

MT-100A Microterminal (LCD panel and numeric keypad) offers manual entry of desired delay.



Colby XT Series Comparison Chart

XT-100

Our most versatile product with a single input channel and a customizable delay range.

XT-200

The advantage of dual input channels in a single programmable delay line instrument.

XT-100-OEM

Integrate the capabilities of Colby's patented trombone technology within your own solutions.

	XT-100	XT-200	XT-100-OEM
Technology Type	Trombone, Trombone + Relay	Trombone	Trombone
Number of Channels	1	2	1
Signal Input Range	0 - 18 GHz	0 - 18 GHz	0 - 18 GHz
Min. Step Resolution	0.25 ps	0.25 ps	0.25 ps
Max Delay Range	625 ps, 2.50 ns, 5.00 ns, 10.0 ns, 20.0 ns, 50.0 ns, 80.0 ns, 100.0 ns	312.5, 625.0 ps per channel	625.0 ps
Phase Shift Step Resolution	0.18 ° per 1 GHz	0.18 ° per 1 GHz	0.18 ° per 1 GHz
Total Phase Shift at 1 GHz	225°, 900°, 1800°, 3600°, 7200°, 18000°, 28800°, 36000°	112.5°, 225°	225°
Total Phase Shift at 5 GHz	1125°, 4500°, 9000°, 18000°, 36000°, 90000°, 144000°, 180000°	562.5°, 1125°	1125°
Switching Speed*	250 ms - 6500 ms	250 ms - 6500 ms	250 ms - 6500 ms
Ext. Trigger	no	no	no
Ethernet TCP/IP	yes	yes	yes
Serial RS-232	yes	yes	yes
Web Browser UI	yes	yes	yes
Microwave Relay Rated	5m MTBF	n/a	n/a
Recommended Service Interval	500,000 operations or 1 year [2][3]	500,000 operations or 1 year [2][3]	500,000 operations or 1 year [2][3]
Min. frequency for 360° phase shift coverage	1.6 GHz, 400 MHz, 200 MHz, 100 MHz, 50 MHz, 20 MHz, 12.5 MHz, 10 MHz	3.2 GHz, 1.6 GHz	1.6 GHz
Dimensions	12" L x 16 3/4" W x 3 1/2" H (2U)	12" L x 16 3/4" W x 3 1/2" H (2U)	9 1/2" L x 4" W x 2 3/4" H
Weight	4.1 kg (9.0 lbs.) to 5.0 kg (11 lbs.)	5.4 kg (12 lbs.)	1.5 kg (3.3 lbs.)

* depending on network latency

[2] Rated lifetime is specified for maximum switching current of 100 ma. Higher currents for increased power handling can be switched (up to 100W CW max.), but the rated lifetime will be lower.

[3] All connection interfaces should be inspected/serviced to ensure instrument is operating at its published performance specifications.