CONFIGURATION GUIDE

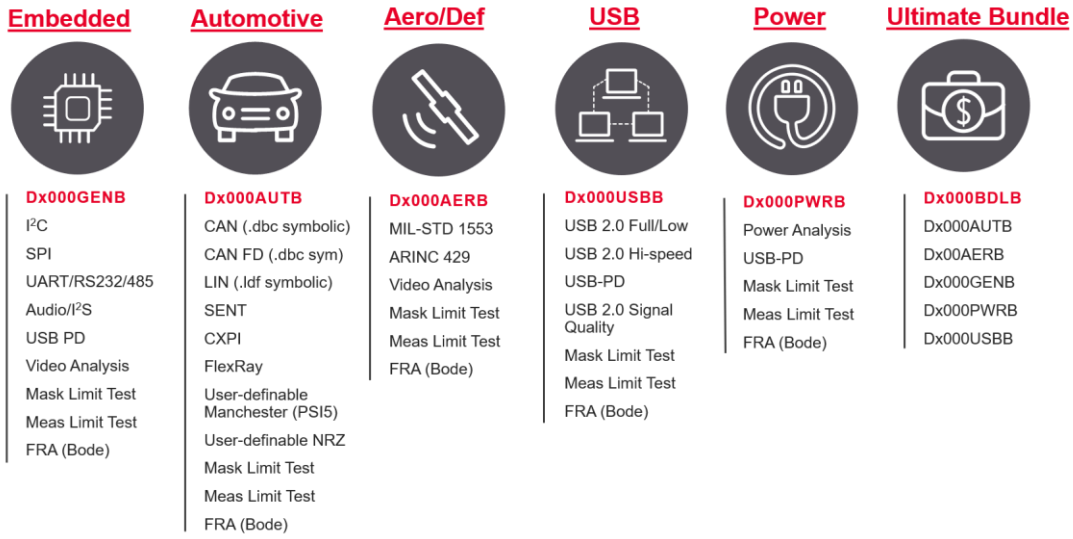
InfiniiVision Software Ordering Guide

Application Specific Software Products

KEYSIGHT TECHNOLOGIES

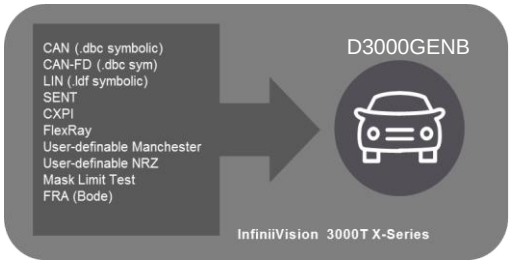
Application Specific Software Products

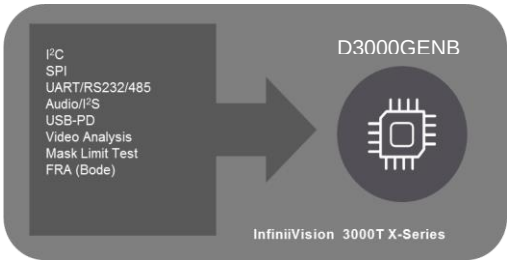
Five application-focused software packages, as well as a value-priced ultimate bundle package, are supported in InfiniiVision X-Series oscilloscopes. Applications areas supported include Automotive, Aerospace & Defense, Embedded Design, Power Testing, and USB 2.0. Unlike other oscilloscope software products in the market, you don't need to worry about which protocol or features you need to pick first. All you need is to pick the application for your current and anticipated projects.



Multiple automotive serial bus protocols and features are often required to test automotive serial bus systems. With the InfiniiVision D3000AUTB automotive package (for InfiniiVision 3000T/G X-series), you can get all automotive-related trigger, decode and analysis features you need, including CAN, CAN FD, LIN, SENT, CXPI, FlexRay, Manchester, NRZ, Mask, and FRA (Bode plots). Moreover, the cost for this package is extremely affordable and priced similar to single protocol software options from other oscilloscope vendors.

If you are working with embedded designs, triggering on and decoding I2C, SPI, and UART/RS232/RS485 may be required. Although support for just one protocol may be needed today, it can be annoying if you need to purchase support for additional protocols for future projects. The D3000GENB embedded software package (for InfiniiVision 3000T/G X-series) also supports USB PD, Audio (I2S), Enhanced HDTV video analysis and frequency response analysis (Bode plots).





This document provides an overview of each InfiniiVision software package with direct links to dedicated software package data sheets that provides additional information for each application.

Automotive Software Packages

The Automotive Software Package for Keysight's InfiniiVision oscilloscopes enables protocol triggering and decode for a broad range of the most common automotive serial buses used today for power train and body control and monitoring. This package also enables other advanced analysis capabilities including eye-diagram mask testing and frequency response analysis (gain and phase Bode plots) to help test and debug automotive electronic systems.

InfiniiVision X-Series		2000A	3000A	3000T	4000A	6000A	P9240	M9240
Automotive software package model number		D2000AUTB	D3000AUTB	D3000AUTB	D4000AUTB	D6000AUTB	P9240AUTC	M9240AUTB
Serial trigger & decode	CAN [1]	✓	✓	✓	✓	✓	✓	✓
	CAN FD [1]			✓	✓	✓	✓	✓
	LIN [2]	✓	✓	✓	✓	✓	✓	✓
	FlexRay		✓	✓	✓	✓		
	SENT			✓	✓	✓	✓	✓
	PSI5 (user-definable Manchester)			✓	✓	✓	✓	✓
	User-definable NRZ			✓	✓	✓	✓	✓
	CXPI			✓	✓	✓	✓	✓
Advanced analysis	Mask limit test [3]	✓	✓	✓	✓	✓	✓	✓
	Measurement limit test	✓	✓	✓	✓	✓		
	Frequency response analysis (bode plots)			✓	✓	✓	✓	✓
	Advanced math	Std	✓	Std	Std	Std	Std	Std

Recommended probes for automotive differential buses

Differential bus (max bit rate)	N2791A (25-MHz BW)	DP0010A [4] (250-MHz BW)
CAN (1 Mbps)	✓	
CAN FD (10 Mbps)		✓
FlexRay (10 Mbps)		✓

1. Symbolic decoding supported by importing .dbc file, except on the 2000A and 3000A Series.
2. Symbolic decoding supported by importing .ldf file, except on the 2000A and 3000A Series.
3. CAN, CAN FD, FlexRay, and SENT mask files available for download at no additional charge.
4. The DP0010A differential probe is not compatible with Keysight's InfiniiVision 2000A and 3000A X-Series oscilloscopes.

Aero Software Packages

The Aero Software Package for Keysight's InfiniiVision oscilloscopes enables protocol triggering and decode for the MIL-STD 1553 and ARINC 429 serial buses. This package also enables other advanced analysis capabilities including eye-diagram mask testing, enhanced HDTV video analysis, and frequency response analysis (Bode plots) to help test and debug electronic systems found in the aerospace & defense industries.

InfiniiVision X-Series		3000A	3000T	4000A	6000A	P9240	M9240
Aero software package model number		D3000AERB	D3000AERB	D4000AERB	D6000AERB	P9240AERC	M9240AERB
Serial trigger & decode	MIL-STD 1553	✓	✓	✓	✓	✓	✓
	ARINC 429	✓	✓	✓	✓	✓	✓
Advanced analysis	Mask limit test	✓	✓	✓	✓	✓	✓
	Measurement limit test		✓	✓	✓	✓	✓
	Frequency response analysis (bode plots)		✓	✓	✓	✓	✓
	Enhanced HDTV video triggering & analysis	✓	✓	✓	✓	✓	✓
	Advanced math	✓	Std	Std	Std	Std	Std

Recommended probes for aerospace differential buses

Differential bus (max bit rate)	N2791A (25-MHz BW)	DP0010A [1] (250-MHz BW)
MIL-STD 1553 (1 Mbps)	✓	
ARINC 429 (100 kbps)	✓	✓

1. The DP0010A differential probe is not compatible with Keysight's InfiniiVision 2000A and 3000A X-Series oscilloscopes.

Embedded Software Packages

The Embedded Software Package for Keysight's InfiniiVision oscilloscopes enables protocol triggering and decode for a broad range of the most common serial buses used today for embedded and mixed-signal designs. This package also enables other advanced analysis capabilities including mask testing, enhanced HDTV video analysis, and frequency response analysis (Bode plots) to help test today's embedded designs.

InfiniiVision X-Series		2000A	3000A	3000T	4000A	6000A	P9240	M9240
Embedded software package model number		D2000GENB	D3000GENB	D3000GENB	D4000GENB	D6000GENB	P9240GENC	M9240GENB
Serial trigger & decode	I^2C	✓	✓	✓	✓	✓	✓	✓
	SPI	✓	✓	✓	✓	✓		
	UART (RS-232/485)	✓	✓	✓	✓	✓	✓	✓
	I^2S (audio)		✓	✓	✓	✓		
	USB-PD			✓	✓	✓	✓	✓
Advanced analysis	Mask limit test	✓	✓	✓	✓	✓	✓	✓
	Measurement limit test			✓	✓	✓	✓	✓
	Frequency response analysis (bode plots)			✓	✓	✓	✓	✓
	Enhanced HDTV video test		✓	✓	✓	✓	✓	✓
	Advanced math	Std	✓	Std	Std	Std	Std	Std

Recommended probes for embedded protocols

	Speed	Recommended probes
I^2S (audio)	2.8 MHz	Single-ended passive probes
I^2C/SMbus	< 4 MHz	Single-ended passive probes
RS232/UART	< 10 MHz	Single-ended passive probes
RS422/485	10 MHz differential	DP0010A differential active probe
SPI	1~100 MHz	Single-ended passive probes, N2795A active probes
USB PD	300 kHz	Single-ended passive probes

Power Software Packages

The Power Software Package for Keysight's InfiniiVision oscilloscopes enables a broad range of automated power supply characterization measurements including critical frequency response measurements such as power supply rejection ratio (PSRR) and control loop response. This package also enables hardware-based pass/fail mask testing and USB PD triggering and decode.

InfiniiVision Series:			3000A	3000T	4000A	6000A	M9240
Power package model number:			D3000PWRB	D3000PWRB	D4000PWRB	D6000PWRB	M9240PWRB
Power Supply Characterization Measurements	Input analysis	Real power	✓	✓	✓	✓	✓
		Apparent power	✓	✓	✓	✓	✓
		Reactive power	✓	✓	✓	✓	✓
		Power factor	✓	✓	✓	✓	✓
		Crest factor (V&I)	✓	✓	✓	✓	✓
		Phase angle	✓	✓	✓	✓	✓
		Current harmonics	✓	✓	✓	✓	✓
		Inrush current	✓	✓	✓	✓	✓
	Switching device analysis	Switching loss	✓	✓	✓	✓	✓
		RDS(ON)	✓	✓	✓	✓	✓
		VCE(SAT)	✓	✓	✓	✓	✓
		Slew rate (V&I)	✓	✓	✓	✓	✓
		Modulation analysis	✓	✓	✓	✓	✓
		Auto probe deskew	✓	✓	✓	✓	✓
	Output analysis	Output ripple	✓	✓	✓	✓	✓
		Turn on/off time	✓	✓	✓	✓	✓
		Efficiency	✓	✓	✓	✓	✓
		Transient response	✓	✓	✓	✓	✓
	Frequency response analysis	PSRR		✓	✓	✓	✓
		Control loop response		✓	✓	✓	✓

InfiniiVision Series:		3000A	3000T	4000A	6000A	M9240
Power package model number:		D3000PWRB	D3000PWRB	D4000PWRB	D6000PWRB	M9240PWRB
Other advanced analysis capabilities	Frequency response analysis (bode plots)	✓	✓	✓	✓	✓
	USB PD (power delivery) trigger & decode	✓	✓	✓	✓	✓
	Mask limit test	✓	✓	✓	✓	✓
	Measurement limit test	✓	✓	✓	✓	✓
	Advanced math	✓	Std	Std	Std	Std

USB Software Packages

The USB Software Package for Keysight's InfiniiVision oscilloscopes enables USB 2.0 low-, full-, and hi-speed protocol triggering and decode, as well as USB PD (Power Delivery) trigger and decode. This package also enables other advanced analysis capabilities including USB 2.0 automated signal quality testing, jitter analysis (6000 X-Series only, mask testing, and frequency response analysis (Bode plots) to help test and debug high-speed digital signals, such as USB 2.0.

InfiniiVision Series:		3000T	4000A	6000A
USB package model number:		D3000USBB	D4000USBB	D6000USBB
Serial trigger & decode	USB 2.0 low- & full-speed	✓	✓	✓
	USB 2.0 Hi-speed [1]		✓	✓
	USB PD (power delivery)	✓	✓	✓
Advanced analysis capabilities	USB 2.0 signal quality test [2]		✓	✓
	Jitter analysis			✓
	Mask limit test	✓	✓	✓
	Measurement limit test	✓	✓	✓
	Frequency response analysis	✓	✓	✓

1. USB 2.0 hi-speed trigger & decode supported on ≥ 1-GHz bandwidth models only.
2. USB 2.0 hi-speed signal quality tests on ≥ 1.5-GHz bandwidth models only.

Probing the USB 2.0 Differential Bus

To test USB 2.0 low- and full-speed designs, the only probes required are two 10:1 passive probes, which are shipped as standard accessories with every Keysight InfiniiVision X-Series oscilloscope.

To test USB 2.0 hi-speed designs based on pre-compliance standards with the appropriate device or host test fixture, 50-Ω SMA cables with SMA-to-BNC adapters are all that is required. For this use-model of testing, the test fixture (E2666B for device, E2667B for host) is programmed to generate a specific test pattern.

During the design and debug phase of product development, engineers often need to test “live traffic” in their hi-speed designs (non-compliance testing). In this case, a test fixture is not required, but a differential active probe with sufficient bandwidth is required. For this use-model of testing, Keysight recommends an InfiniiMode N2750A Series differential active probe.

Keysight’s InfiniiMode N2750A Series differential active probe.

Ultimate Software Packages

The Ultimate Bundle Software Package bundles all the serial bus protocol trigger & decode capabilities, as well as all the advanced measurement capabilities of the individual licensed industry/application software packages (Auto, Power, Aero, USB, and Embedded).

InfiniiVision Series:			2000A	3000A	3000T	4000A	6000A	P9240	M9240
Ultimate package model number:			D2000BDLB	D3000BDLB	D3000BDLB	D4000BDLB	D6000BDLB	P9240BDLC	M9240BDLB
Serial trigger & decode	I^2C	Embedded package	✓	✓	✓	✓	✓	✓	✓
	SPI		✓	✓	✓	✓	✓		
	UART		✓	✓	✓	✓	✓	✓	✓
	I^2S			✓	✓	✓	✓		
	CAN	Auto package	✓	✓	✓	✓	✓	✓	✓
	CAN FD				✓	✓	✓	✓	✓
	LIN		✓	✓	✓	✓	✓	✓	✓
	FlexRay			✓	✓	✓	✓		
	SENT				✓	✓	✓	✓	✓
	PSI5 (user-definable Manchester)				✓	✓	✓	✓	✓
	User-definable NRZ				✓	✓	✓	✓	✓
	CXPI				✓	✓	✓	✓	✓
	MIL-STD 1553	Aero package		✓	✓	✓	✓	✓	✓
	ARINC 429			✓	✓	✓	✓	✓	✓
	USB-PD	USB/Pwr/Embd			✓	✓	✓	✓	✓
	USB low & full-speed	USB package			✓	✓	✓		
	USB hi-speed [1]				✓	✓	✓		

1. USB hi-speed trigger & decode available in ≥ 1-GHz bandwidth models only.

InfiniiVision Series:			2000A	3000A	3000T	4000A	6000A	P9240	M9240
Ultimate package model number:			D2000BDLB	D3000BDLB	D3000BDLB	D4000BDLB	D6000BDLB	P9240BDLC	M9240BDLB
Advanced analysis	USB signal quality test	USB package				✓	✓		
	Jitter analysis						✓		
	Power analysis	Power package		✓	✓	✓	✓		✓
	Mask test	Power package	✓	✓	✓	✓	✓	✓	✓
	Frequency response analysis				✓	✓	✓	✓	✓
	Advanced math		Std	✓	Std	Std	Std	Std	Std
	Enhanced HDTV video test	Embedded/aero		✓	✓	✓	✓	✓	✓