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Viplax-II Signal Transmission System for Analog and Digital Signals

Inventronik GmbH
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Introduction

Viplax-II is our second generation signal transmission system and follows on the heels of the versatile Viplax I. This new system is refined and improved thanks to our long experience with Viplax-I. Viplax-II features the transmission of analog or digital signals over a fiber-optic cable delivering them faithfully and in high quality to the receiver.

Analog signals are sampled and digitalized by A/D-Converter with a resolution of 14 bits. The data is serialized and transmitted high speed over a fiber optic link. At the receiver, the analog data is reproduced in its original quality from the serial digital data. Digital signals are also transmitted serially.

Viplax-II features error correction and a fail safe architecture which guarantees a safe operation even in case of a fault. Last but not least Viplax-II is highly customizable. With Viplax-II you are purchasing a powerful transmission system optimaly suited for use in your critical environments.

Data at a Glance

AD / DA converters with 14 bits digital resolution.
Analog bandwidth > 9MHz (theoretically up to 18MHz).
Signal latency < 400ns.
Remote controllable amplification factors.
Easy installation and initial start-up.
Immediately operational - No software configuration needed.

Components of the Viplax-II System

Besides the reliable 19“-3HE cassette system available in Viplax-I there are also analog transmitters and receivers in handheld cases specifically for mobile applications. Each component is described in detail below.

Digital Transceiver

This component allows for isolated bi-directional transmission of 16 digital signals with minimal latency. The inputs are designed for a wide input voltage range between 3 VDC and 24 VDC and the outputs are equipped with optical relays.

Analog Handheld Transmitter

Signals with an input voltage range of up to +/-10V are digitalized with a resolution of 14 bits and a sampling rate of 36 Msps. The theoretical Nyquist signal frequency is 18MHz. Viplax-II is nine times faster than Viplax-I.

The operation voltage of this transmitter is12 VDC supplied by a wall cube adapter or a battery pack. Both are available as accessories.

Analog Handheld Receiver

The receiver reproduces the analog signal in the highest quality. Like the transmitter, the DA converter has a resolution of 14 bits and is powered by a wall cube adapter or a battery pack.

Analog Transmitter and Receiver in 19" Rack Mount System

The transmitters and receivers in the rack mount are identical to those in the handheld units. The only differences are in the mounting and the power supply. The rack mounted systems have power supply components while the Viplax-II system backplane provides a link between the transmitter or receiver cassettes and the power supply cassette.

Accessories

Handheld Unit Power Supplies

You will need one power supply for each transmitter or receiver. The output voltage is 12 VDC. The input voltage range works world-wide: 100 VAC to 240 VAC.

Power Supply for the 19“ Rack Mount Components

One power supply is sufficient to power one analog transmitter, one analog receiver and one digital transceiver simultaniously through a Backplane-Tri. It is designed in 50Hz / 60Hz technology to minimize electromagnetic interference.

Backplane-Tri for the 19" Rack Mount System

The Backplane-Tri connects a power supply and up to three Viplax-II components. There are optional clamps on the backplane to connect the digital transceiver.

Battery Pack for the Handheld Transmitter / Receiver

The battery pack has an output voltage of 12 VDC and a capacity of 7.2 Ah. It is a dry-cell system powerful enough to operate a transmitter or a receiver for several hours. Charging the battery pack while suppliying Viplax-II is possible.

Battery Charger

Inventronik GmbH offers a recommended charger for Viplax-II battery packs.

Fiber-Optic Duplex Cable with LC Connectors on Both Ends

Inventronik GmbH offers fiber-optic cables in any length up to 300m.

Transportation Case

Suited for one transmitter, one receiver, two power supplies, a charger and a battery pack.

Field of Application

Measurement in high voltage plants.
Signal processing in laboratories.
Signal processing in areas of high electromagnetic interference.
Offshore signal processing.

Controlling of industrial equipment (digital Viplax-II).
Signal- and control applications in research laboratories and development departments.
Use of fiber optic cables alongside high voltage cables.

About Inventronik

Inventronik GmbH is specialized in development and production of industrial electronic components such as controllers, signal conditioning and transmission systems and power electronics.

Our customers are companies engaged in manufacturing, power generation, scientific laboratories, R&D and universities. We are proud to serve Bosch GmbH, Daimler AG, Siemens AG, Max Planck Society, the Bombardier AG.

Further Information

Viplax-II User's Manual: www.inventronik.de/download/Viplax-II/documentation

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Technical Information

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Comparision Viplax-II and Viplax-I

The following table lists the technical data of the Viplax-II system against Viplax-I.

Viplax-I		**Viplax-II**
	Analog input section	
+/- 1, 2, 5, 10, 20, 50, 100 V	Input voltage range	+/- 1, 2, 5, 10 V
< 1mV	Offset	< 1mV
	A/D converter section	
14 Bit	Resolution	14 Bit
10Msps	Maximum sampling rate	36Msps
> 65dB	Signal to noise ratio	>73 dB
+/- 2.5LSB	Integral linearity error	+/- 1.4LSB
+/- 1LSB	Differential nonlinearity	+/- 0.7 LSB
> 12.2 (typ.)	Effective number of bits	> 12.1 (typ.)
	D/A converter section	
14 Bit	Resolution	14 Bit
125Msps	Maximum sampling rate	36Msps
>75 dB	Signal to noise ratio	>75 dB
+/- 2.5LSB	Integral linearity error	+/- 2.5LSB
+/- 1.5LSB	Differential nonlinearity	+/- 1.5LSB
	Digital signal processing	
10Msps	A/D sampling rate	36Msps
10Msps	D/A sampling rate	36Msps
2.5MHz	System bandwidth 3dB	Typ. 10MHz
5.0MHz	Nyquist frequency	18.0MHz
2.5us (typ.)	Signal latency	400ns (typ.)
	Fiber optic link	
200MHz	Bitclock	1.5GHz
1300nm	Opticale wave length	850nm
50µm/62.5µm multimode	Fiber type	50µm/62.5µm multimode duplex
ST	Connector type	LC duplex
1000m	Maximum transmission length	300m / 10.000m with repeater

	Analog output section	
+/-10V@100Ohm	Voltage output swing channel 1	+/-10V@50Ohm
+/-5V@50Ohm	Voltage output swing channel 2	No second channel.
< 1mV	Offset	< 1mV
	Features	
x	Window comparators	-
x	Battery supervision	x
x	A/D overflow detection	x
x	LED signaling	x
x	Adjustable gain settings (no remote)	-
-	Remote adjustable gain settings	x
-	Unique series number	x
x	Version control	x
-	Calibration feature	x
x	USB-interface	-