XSIGHT

SYNCHRON
Analog Input Signal Synchronization

FEATURES
- Synchronization with an analog input signal in the range of 5-200 Hz
- Various synchronization modes
- Up to 1000 Hz of internal synchronization

SOFTWARE
- X-Sight Alpha support
- Operable via COM port

SUPPORTED OPERATING SYSTEMS
- Win 11 64bit / Win 10 64bit
- Win Server 2019 / Win Server 2022

Latest Release on date of purchase

SYNCHRON GENERATES SYNCHRONIZATION PULSES FOR CAMERAS OR SIMILAR DEVICES ACCORDING TO AN ANALOG INPUT SIGNAL
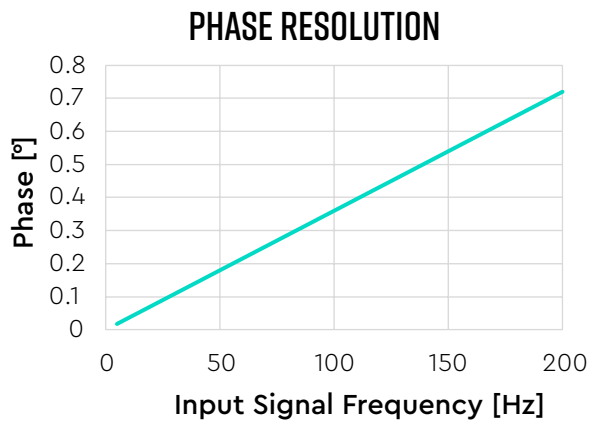
OVERVIEW

Synchron is an auxiliary triggering device designed to precisely synchronize X-Sight measuring systems with external harmonic analog signals. The device's primary application is measuring harmonic events where the camera's maximum frame rate is insufficient to capture the event accurately. The Synchron device also supports internal synchronization without an analog input signal, enabling the synchronization of multiple measuring devices.

WORKING PRINCIPLE

The analog part of the module measures differentially the input voltage by means of a divider. The signal is then processed by a programmable amplifier and sampled by a 16-bit ADC with a 50 kHz sampling rate.

The phase resolution of the external signal is shown in the graph below.

PHASE RESOLUTION

ANALOG INPUT

The harmonic analog external signal is sent to the device through a BNC connector.

Rear panel with Input and Outputs

The input voltage range is selectable to ensure that the ADC range is used efficiently, guaranteeing accurate quantization and sampling of the input signal.

For proper functioning of the Synchron device, it is recommended to use at least 10% of the selected ADC voltage range. The voltage range of ±10 V is selected by default after power-up.

Selectable Ranges				
Bipolar	±10 V	±5 V	±2.5 V	±1.25 V
Unipolar	0-10 V	0-10 V	0-10 V	0-10 V

It is not recommended to exceed the selected ADC voltage range, as the input signal will be clipped. Signal voltage exceeding the ADC range but remaining below ±15 V does not cause harm to the device.

Input Signal Parameters	
Max Allowed Voltage	±15 V
Input Impedance	35 kΩ
Input Frequency	5-200 Hz

DIGITAL OUTPUT

The output M8 3-pin connectors provide 5V logic digital pulses for the synchronization of X-Sight measuring systems.

Pin	Connection
1 (brown)	+5V
3 (blue)	Not used
4 (black)	GND

Output Signal Parameters	
Logical 1	5 V
Logical 0	0 V
Impedance	23 Ω
Peak Current	500 mA
Current	120 mA
Allowed Load	> 50 Ω
Rise/Fall Time	1 µs
Synchronization Resolution	±10 µs

OPERATIONAL MODES

The device operates in two synchronization modes: as an **independent trigger** with up to 1000 Hz synchronization frequency, or in **synchronization mode** based on the analog input signal, which offers various synchronization options.

MODES OF INDEPENDENT TRIGGER
- Frequency Mode: n (Hz)
- Time Mode: n (s)

ANALOG INPUT SIGNAL MODES
- n-th Positive Peak
- n-th Negative Peak
- n-th Positive and Negative Peak
- n-th Rising Zero Crossing
- n-th Falling Zero Crossing
- n-th Rising and Falling Zero Crossing
- Strobe Mode Trigger

With the Strobe Mode Trigger, the Synchron device can synchronize low-speed cameras with a high-speed external analog signal by applying phase shifting of the trigger to provide a sufficient description of the period of the measured process.

MECHANICAL DIMENSIONS

The following table includes the mechanical dimensions for Synchron.

Front and side-top view of Synchron

Dimension	Value
Length	210 mm
Width	130 mm
Height	50 mm
Weight	0.6 kg

PC CONNECTION

The device is connected to the PC using a USB 2.0 A/C cable. Synchron creates a Serial COM port with the following default settings:

Parameter	Value
Baud Rate	115,200
Data Bits	8
Parity	none
Stop Bits	1
Handshake	RTS/CTS

POWER CONSUMPTION

The Synchron device is powered by the USB bus and typically consumes 1 W.

OPERATION CONDITIONS

The device is designed for indoor use only. Do not expose it to moisture or allow it to get wet.

Item	No. of pieces
Temperature	-5–45 ℃
Humidity	30–70 %

This product complies with EU Directive 2002/96/EC.

PACKAGE CONTENTS

.One BNC male screw-type terminal connector and two M8 3-pin male cable connectors are included, allowing the user to assemble custom cabling.

Item	No. of pieces
Synchron	1
USB2 A/C Cable	1
BNC male screw-type terminal connector	1
M8 3-pin male cable connector	1
Manual	1