X SIGHT

PULSEGEN
Incremental Communication Interface

FEATURES
- Emulates incremental encoder
- Endless measurement range
- Loss-less signal transfer
- 2 or 4 channels
- Supports input 5V logic
  for remote measurement START/STOP

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

X-SIGHT PULSEGEN CONVERTS DIC MEASUREMENT INTO A QUADRATURE INCREMENTAL SIGNAL SO IT CAN TRANSFERRED TO THE UTM IN REAL TIME

OVERVIEW

PulseGen is an auxiliary device designed for X-Sight measuring systems that interface with testing machines. For a test rig, PulseGen acts as an incremental encoder that works on 5V pulse logic. For each increment, a full quadratic pulse is generated. This device also features a remote control functionality by means of starting and stopping the measurement.

MODELS

PulseGen device comes in two configurations with either two or four output channels. Both models include the trigger function for remote control.

PulseGen 2CH	PulseGen 4CH

MEASURING LENGTH

Because the PulseGen acts like an incremental sensor, the measuring range is limitless. But be aware that outputting only the differential values such as ΔLength or Strain is more convenient than transferring probe total lengths like Length or Width. The reason is a possible delay caused by the initial gauge length transfer.

For example, having a gauge length of 100 mm and an increment size set to 0.001 mm would require a transfer of 100,000 pulses, causing a momentary delay lasting over a second. The delay is eliminated once the initial length is transferred, and the device becomes highly responsive again.

SAMPLING RATE

The sampling rate is the frequency with which PulseGen outputs the pulses/increments, while the message rate tells us how many commands the device can obtain from the serial bus.

Parameter	Value
Message Rate	250 Hz
Sampling Rate	80kHz combined

The output rate, and therefore a maximal elongation/strain rate transferrable, depends on the number of actively used channels and on the size of the increment.

WORKING PRINCIPLE

A differential from the last known value is calculated when a new measured value is obtained. This differential is then divided by the defined increment size to determine how many pulses have to be created.
The numbers of pulses for each active channel are sent within a single message to the PulseGen device.
The measured data is transferred in pulses using a 5V logic and A/B signal type.
When executing positive increments, the signal on wire A is half of the pulse width ahead of the signal on wire B and vice versa for the negative increments.

Positive/negative increment

The above-illustrated pulses represent a full quadrature pulse consisting of four individual events resulting in four increments.

| Increment 1	A rise
Increment 2	B rise
Increment 3	A fall
Increment 4	B fall

REMOTE CONTROL FUNCTION

The Alpha measurement start and stop can be synchronized with the external event via a 5V input.
The device has an internal pull-down resistor; therefore, the default state is a logical 0. The measurement can be started manually from the Alpha software or a digital command. Supply the SYNC connector position T with 5V to start the measurement via the PulseGen device. The measurement starts with the rising edge and stops with the falling edge.

Logic State	Voltage
0 – LOW	< 1.5
1 – HIGH	> 3.0

REMOTE CONTROL FUNCTION

Each output channel (CH 0-3) has a four-wire screw terminal signed as Each channel has its own galvanically isolated ground.

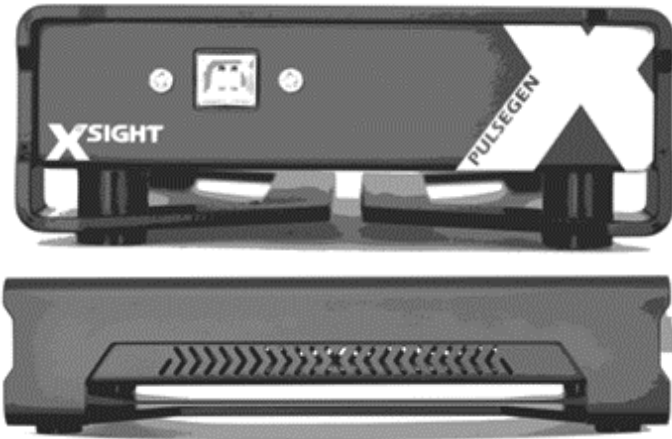| Designation	Meaning
G	Ground
A	Signal A
B	Signal B
I	Indexing Pin
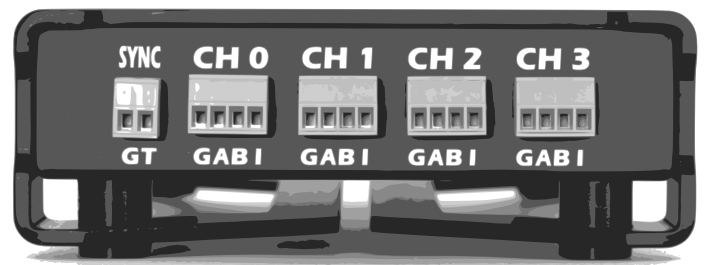
Rear panel with wire screw terminals

The SYNC terminal serves as the remote control function with the following pinout.

Designation	Meaning
G	Ground
T	Trigger Pin

MECHANICAL DIMENSIONS

The following table includes the mechanical dimensions for PulseGen.

Front and side view of PulseGen

Dimension	Value
Length	220 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/B cable. PulseGen creates a Serial COM port with the following default settings

Dimension	Value
Length	220 mm
Width	130 mm
Height	50 mm
Weight	0.6 kg

POWER CONSUMPTION

PulseGen device is powered via the USB bus and consumes less than 1 W.

OPERATION CONDITIONS

The ONE ASTM unit is designed for indoor use only. Do not allow the unit to get wet.

Item	No. of pieces
Temperature	5–40 °C
Humidity	30–70 %

This equipment is compatible with Class A of CISPR 32. In a res¬i¬den¬tial envi¬ron-ment, this equip¬ment may cause radio interference.
This product complies with EU Directive 2002/96/EC.

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PACKAGE CONTENTS

Item	No. of pieces
PulseGen	1
USB2 A/B Cable	1
Manual	1