

---

# YEA VCM VARIABLE CAPACITANCE MODULE DATASHEET



## 1. Description

The module is designed to provide three independent channels of adjustable capacitance. The channels are identical and can be adjusted independently of each other. Each channel can be connected as a variable adjustable capacitor to the electronic circuit via the BNC connector.

The parameters of one channel are given in the table below.

*Table 1-1 Output capacitance of the YEA VCM module one channel*

Range	Step	Accuracy $\pm$ (% of Output)	Response Time
from 10pF to 160pF	10pF	5	less than 100ms
from 170pF to 12000pF	10pF	2	less than 100ms

Independent, parallel, serial and serial-parallel connection of channels is allowed.

Below is the block diagram of the module. The MCU (Microcontroller Unit) controls the capacitances (Capacitors Array 0..2) of the channels, which are connected to the outputs (OUT 0..2). Control commands are sent to the MCU via the USB connector. Information about capacitances set at the outputs of the channels sent from MCU via USB.

The module status is indicated by Indication LEDs. The operation of LEDs is described in section 4.3 Hardware interface.

The module is powered from the PXIe chassis via the corresponding connector.

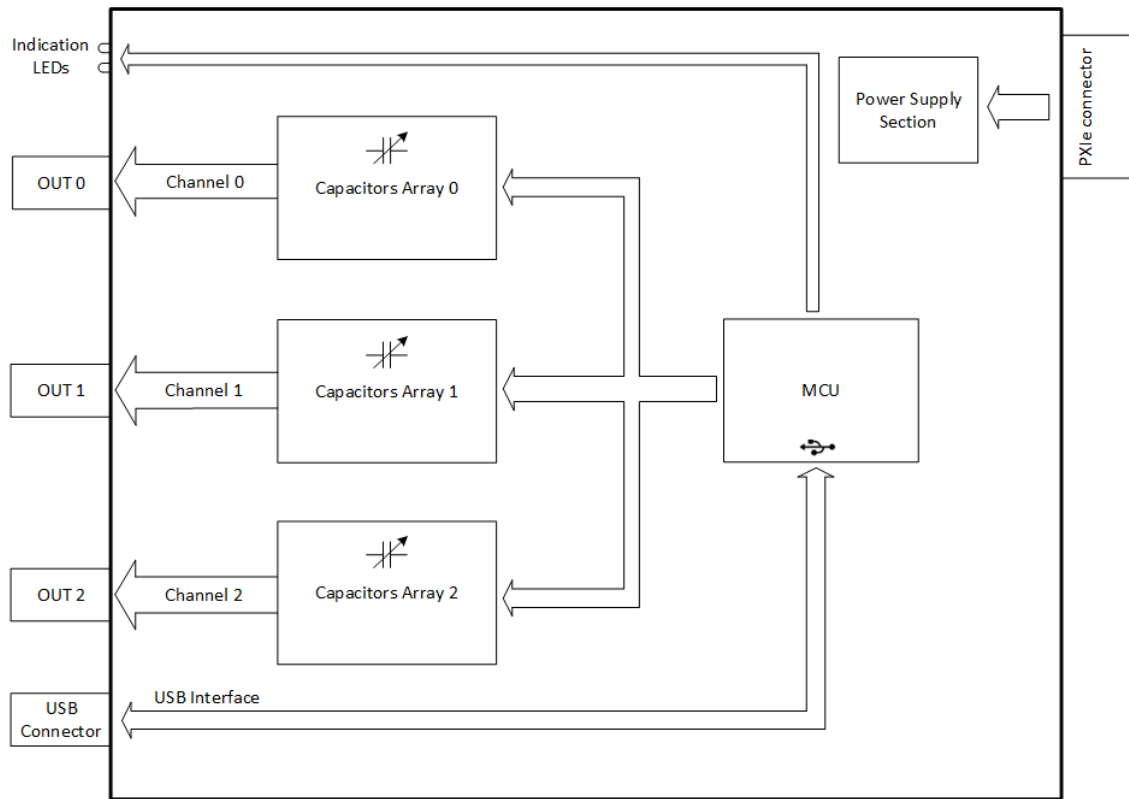


Fig. 1-1 Block diagram of YEA VCM module

## 2. Hardware Requirements

The module is mechanically compatible with 1-slot 3U PXIe form factor systems

The module is controlled by the USB interface on the front panel and the PXIe chassis will provide the required power interface.

- PXIe chassis with available power supply;
- Personal computer with serial port terminal.

Table 2-1

Supply voltage from PXI chassis	12 V; 3.3 V
Maximum voltage between output pins of the one channel	10 V

### Required Items not included in the YEA VCM delivery set

1. PL75-7 connector and 650-7528A5314 cable or analogues are recommended for connecting the YEA VCM and DUT.
2. The USB-C to USB-A 2.0 cable for connection of the module to the PC.
3. PC to operate the system via graphical user interface provided with the module or using VI-should have the minimum requirements shown below:
  - Operating system: Windows 10 or higher
  - CPU: Intel core i3 or higher

- Memory: 4GB RAM or higher
- Free space: 2GB of free space

### 3. External Dimensions

Table 3-1

Dimensions	
Height	115 mm
Length	190 mm
Width	25 mm

### 4. Capacitance Setting Accuracy

The graphs of the set capacitance accuracy dependence of the operating frequency and the capacitance range are shown in the tables below.

The dependencies are obtained for frequencies 200 kHz, 300 kHz, 500 kHz.

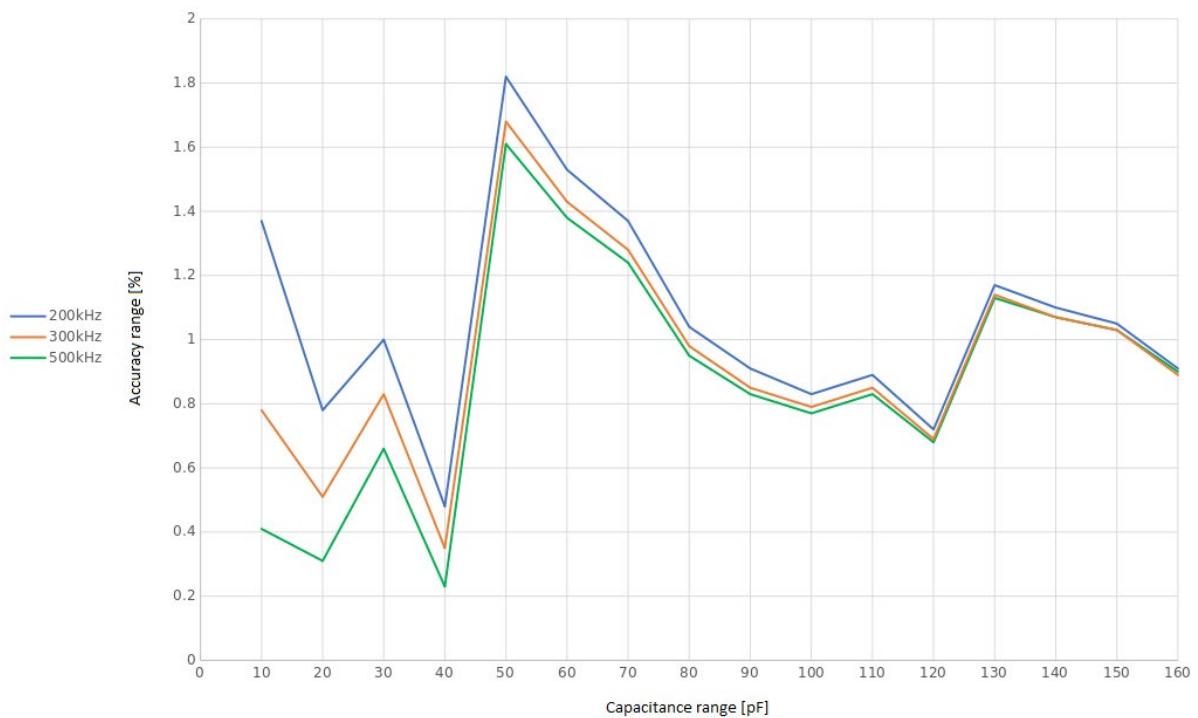


Fig. 4-1 The set capacitance accuracy dependence of the operating frequency and the capacitance range (from 10 to 160 pF)

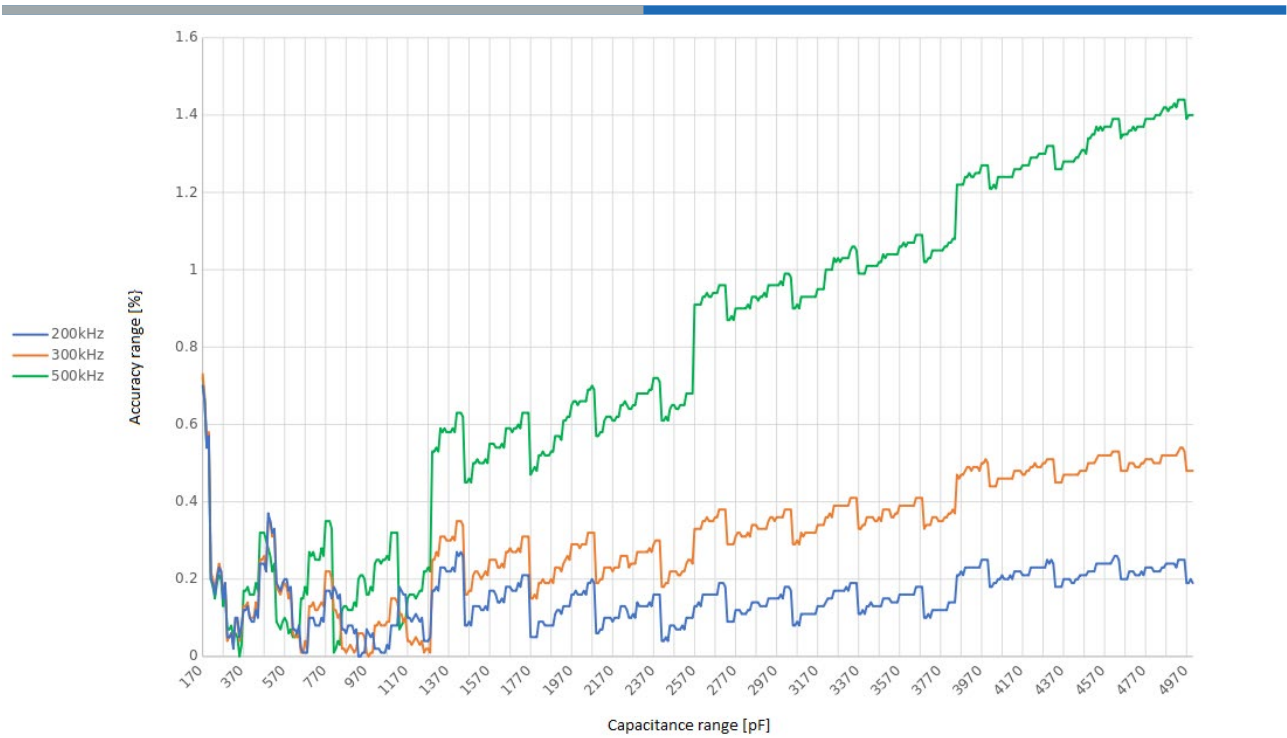


Fig. 4-2 The set capacitance accuracy dependence of the operating frequency and the capacitance range (from 170 to 4970 pF)

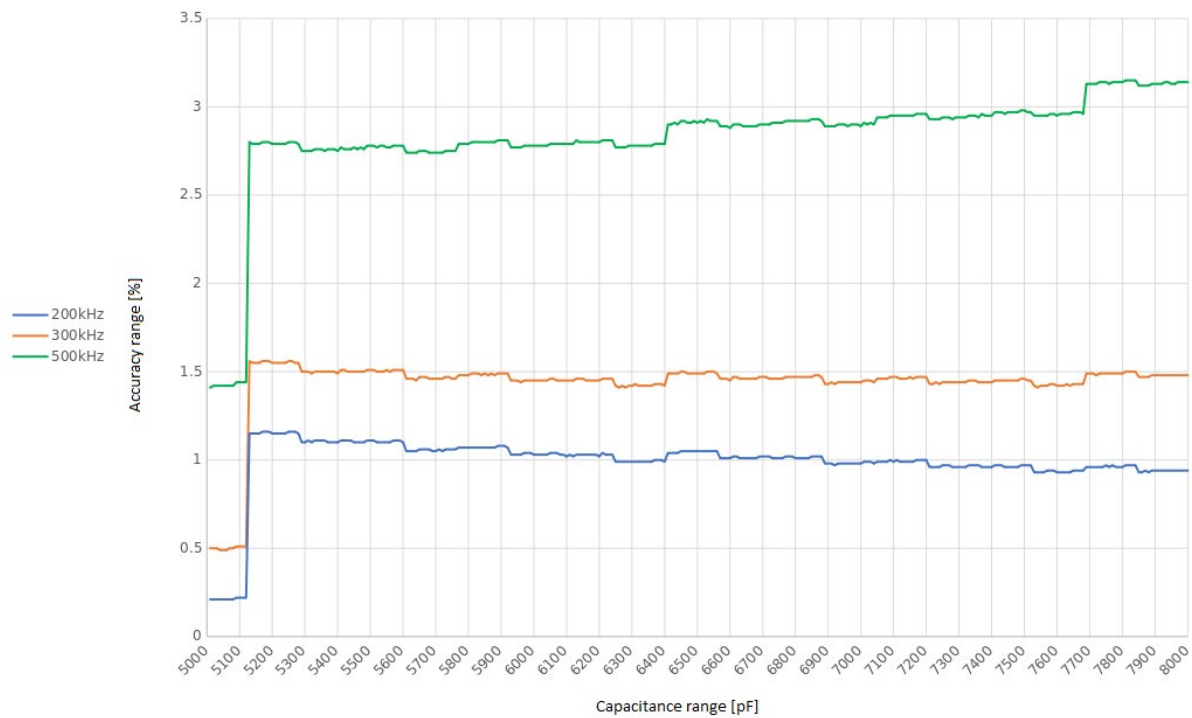


Fig. 4-3 The set capacitance accuracy dependence of the operating frequency and the capacitance range (from 5000 to 8000 pF)

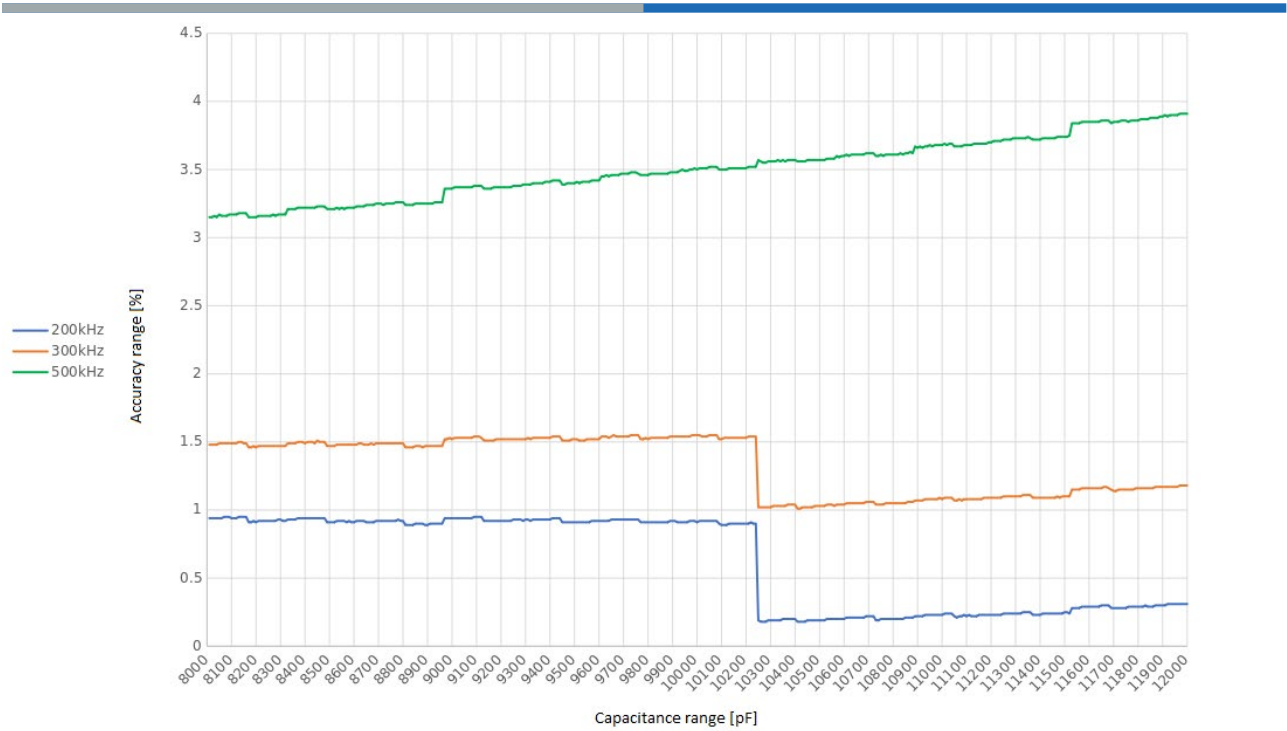


Fig. 4-4 The set capacitance accuracy dependence of the operating frequency and the capacitance range (from 8000 to 12000 pF)