

# ***EA3024***

## **Kilovolt Amplifier**

### **Operation Manual**

## Guarantee and service

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Transmille Ltd. guarantees this instrument to be free from defects under normal use and service for a period of 1 years from purchase. This guarantee applies only to the original purchaser and does not cover fuses, or any instrument which, in Transmille's opinion, has been modified, misused or subjected to abnormal handling or operating conditions.

Transmille's obligation under this guarantee is limited to replacement or repair of an instrument which is returned to Transmille within the warranty period. If Transmille determines that the fault has been caused by the purchaser, Transmille will contact the purchaser before proceeding with any repair.

To obtain repair under this guarantee the purchaser must send the instrument in its original packaging (carriage prepaid) and a description of the fault to Transmille at the address shown below. The instrument will be repaired at the factory and returned to the purchaser, carriage prepaid.

Note :

**TRANSMILLE ASSUMES NO RESPONSIBILITY FOR DAMAGE IN TRANSIT**

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## **EA3024 AC / DC Kilovolt Amplifier**

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The EA3024 is a powerful AC / DC kilovolt amplifier designed exclusively for use with the 3000 Series calibrators which provides a cost effective solution to calibrating high voltage probes and meters.

Connecting to the 3000 Series calibrator using the feature connector, the EA3024 extends the output voltage range to 10kV DC / 5kV AC.

### **Main Features**

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- **Controlled by ProCal or Virtual Front Panel Software (Supplied)**
- **Up to 10V DC • 5kV AC Output**
- **Ideal For Calibrating High Voltage probes and Meters**

## **Design Notes**

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- ❑ Dedicated DC and AC outputs using safety terminals.
- ❑ Separate ground terminal

## **Features**

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Functions of the terminal connections :

<b>EA3024 Terminal Post</b>	<b>Function</b>
DC	DC output
AC	AC output
GND	Ground connection



Label Reference	Information
Model Number	Model number reference for product
Serial Number	Unique serial number for product

## Rear Panel Connections

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Connection to the 3000 Series dedicated kV amplifier interface is provided via a D-Type connection

## Operating Notes

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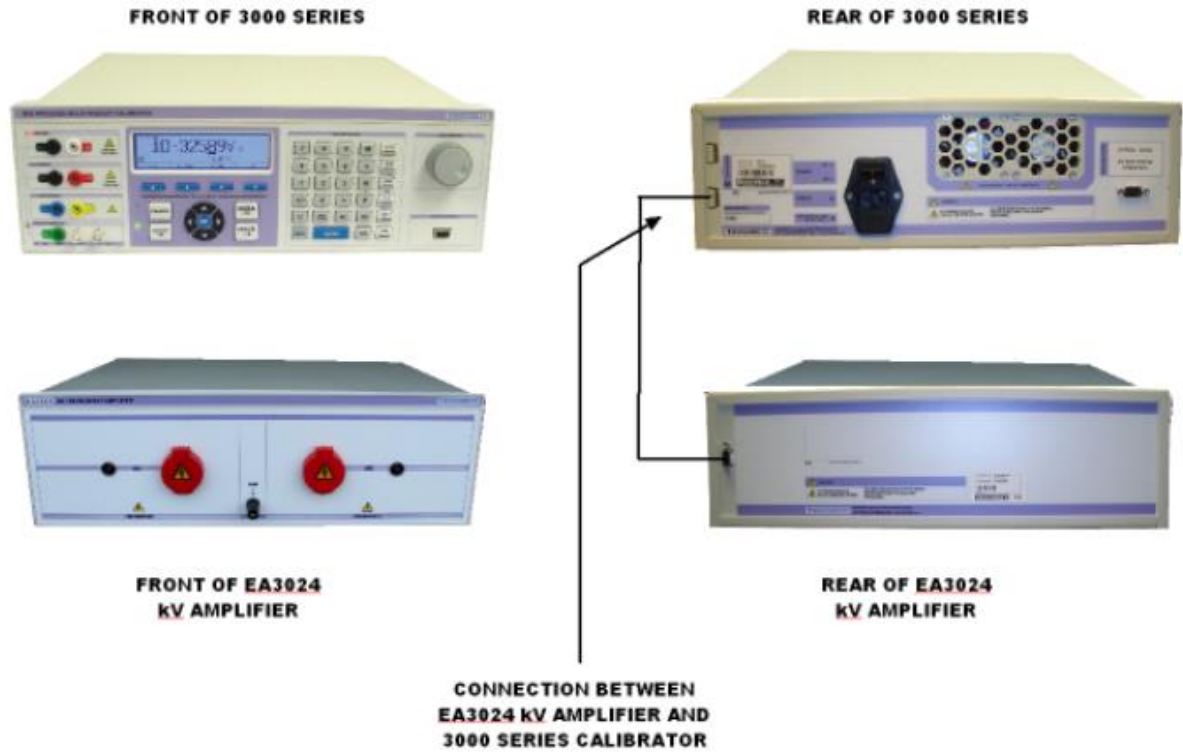
This section details operational and environmental considerations for the EA3024 kilovolt amplifier. Follow these instructions when operating or storing the transconductance amplifier



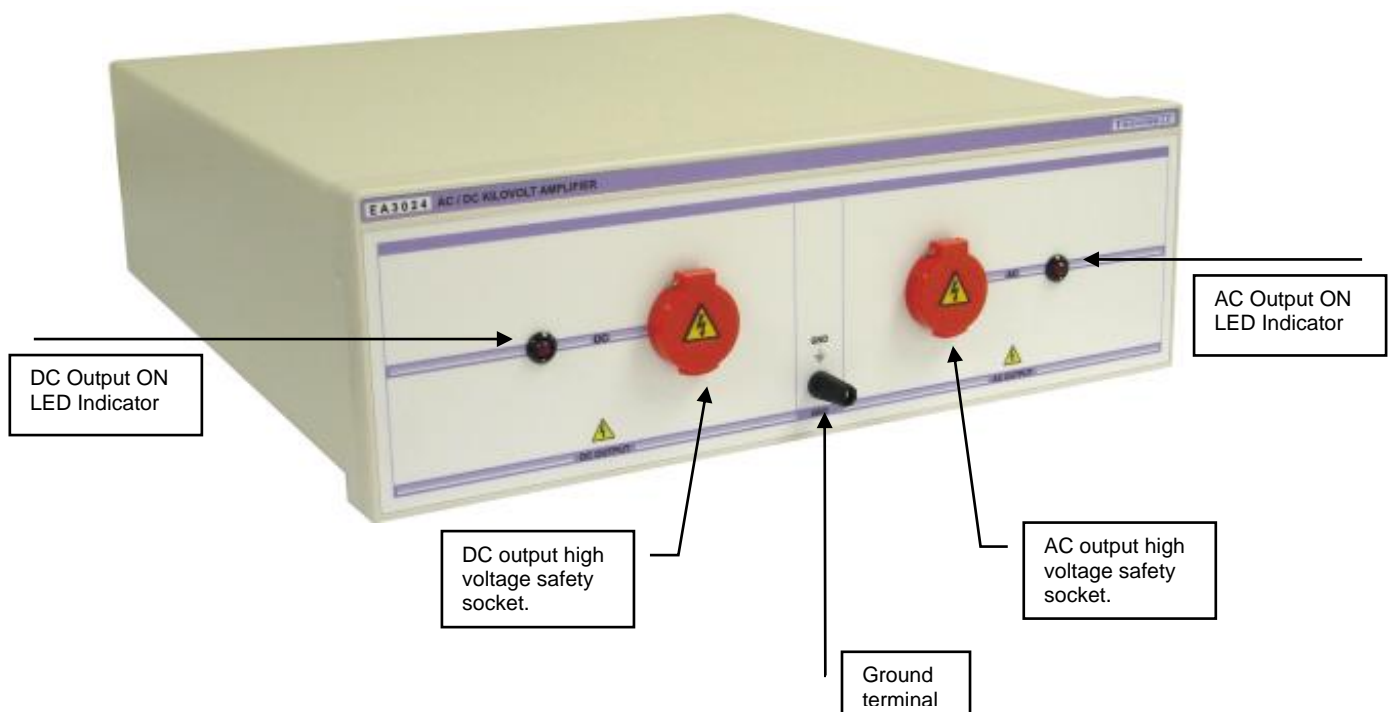
**IMPORTANT**  
The EA3024 kV amplifier does not use the 3000 Series adapter interface for control – a dedicated connection on the REAR of the 3000 Series calibrator MUST be used.

## Connection Recommendations

To connect the EA3024 Kilovolt Amplifier to the 3000 Series multi product calibrator, use the supplied kV Amplifier interface cable :



**NOTE : CONNECTION TO REAR OF 3000 SERIES TO SPECIFIC EA3024 INTERFACE PORT**



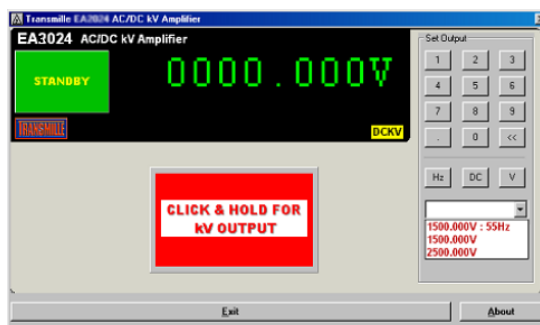
## **Using the EA3024 with the Virtual Front Panel Software**

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### **Installing the Software**

Insert the CD supplied with the EA3024 kV Amplifier – this should auto run. If it does not auto run, click START -> Run then run x:\Setup.exe where x is the drive letter of your CD drive.

Once installation is complete choose START -> ALL PROGRAMS -> EA3024 kV Amplifier to run the virtual front panel



### **Selecting a COM Port**



On starting the virtual front panel for the first time, a COM port selection screen will be displayed. Click on the COM port which is connected to your 3000 Series calibrator to continue.

A different COM port can be selected at any time using the **Change COM** button.

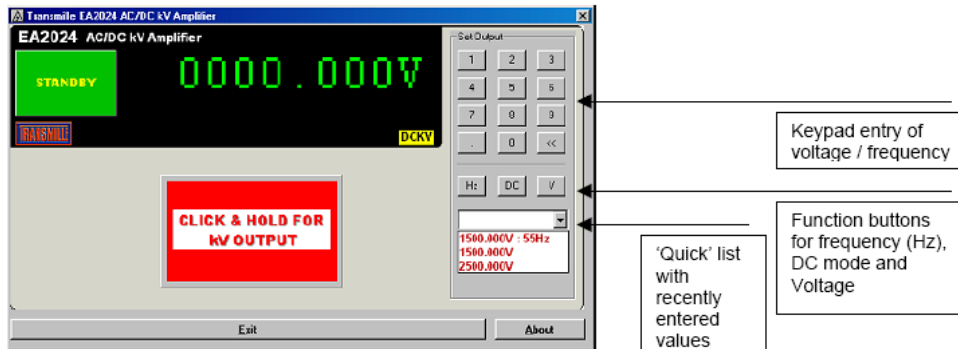


If you are using a laptop to connect to the calibrator, the COM port will usually be COM 1. A desktop computer will usually be COM 2



**Operation of the Virtual Front Panel**

Once the correct COM port is selected, the calibrator will be detected, and the main screen displayed :



**Operation example**

Type 2 5 0 0 V  
Output will display 2500V DCKV  
**Click and hold output button for voltage**

Type 1 5 0 0 V  
Then type 5 5 Hz  
Output will display 1500V 55Hz ACKV  
**Click and hold output button for voltage**

## **kV Amplifier Software Control**

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**Important Note :** The kV amplifier must be connected to a 3000 Series calibrator – it is not designed to be used as a stand-alone unit.

To control the kV amplifier using a computer and software other than the supplied virtual front panel, it is necessary to send the control commands to the 3000 series RS232 port. The connection from the 3000 series to the computer is the upper connector on the rear of the 3000 series calibrator.

The connection from the 3000 Series to the kV amplifier is the lower connector on the 3000 Series rear panel. This is a communications ports between the 3000 series and the kV amplifier, and is not a conventional COM port.

### **EA3024 kV Amplifier Control Commands Overview**

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Sending the commands below to the 3000 Series calibrator RS232 COM Port will set up the kV Amplifier for use

#### **KV Amplifier Mode**

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Command	Description
D1	Set calibrator to kV Amplifier Mode
D0	Set calibrator to Normal Mode

#### **kV Amplifier Function**

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Command	Description
R5	Set DC kV Function
R16	Set AC kV Function

#### **KV Amplifier Output**

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Command	Description
Onnnn (n=digit)	Set kV Output : Divide required voltage by 10 e.g. 1000V = O100 • 5000V = O500

All commands must be terminated with a carriage return (ASCII character 13), for example

**@01 D1/R5/O50/S0>CR**

This will set the kV amplifier to DC mode and output 500V (>CR denotes a carriage return)

This will set the kV Amplifier to 5000V DC

@01 Directs the command to the COM port of the instrument at position 1 of the traceable instrument list in ProSet, e.g. the 3000 Series calibrator.  
D1 Sets kV Amplifier mode on  
R5 Sets 1000V DC Range for kV amplifier  
O500 Sets 5000V Output value  
S0 Turns output on

**@01 D1/R16/O150/F60/S0>CR**

This will set the kV Amplifier to 1500V 60Hz AC

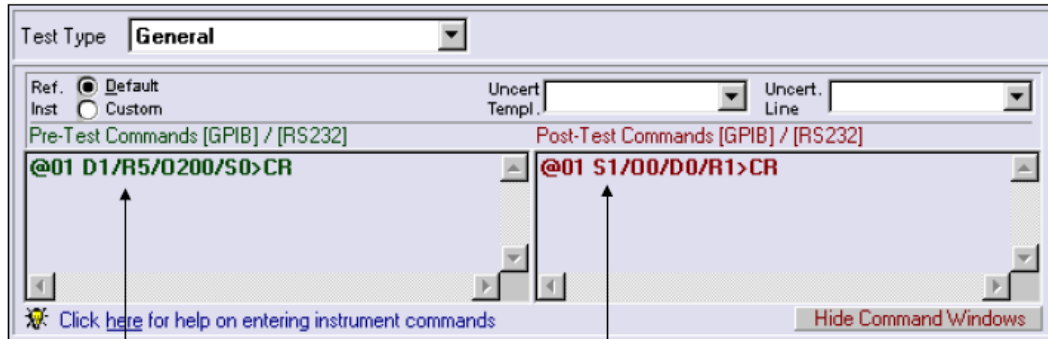
@01 Directs the command to the COM port of the instrument at position 1 of the traceable instrument list in ProSet, e.g. the 3000 Series calibrator.  
D1 Sets kV Amplifier mode on  
R16 Sets 1000V AC Range for kV amplifier  
O150 Sets 1500V Output value  
F60 Sets 60Hz Frequency  
S0 Turns output on

Serial commands to control the adaptor can be sent to the calibrator using either the Virtual Front Panel, ProCal Calibration Software or using any RS232 COM program, such as Hyper Terminal.

## Controlling The EA3024 kV Amplifier Using Transmille ProCal Software

### DC Voltage

Commands to control the kV amplifier using ProCal can be added to each test of a ProCal procedure. Use the instruments tab in ProEdit, and edit the **pre-test** and **post-test** command boxes to enter commands, as shown below :



**Pre-Test Command**

This will send the command

**@01 D1/R5/O200/S0>CR**

followed by a carriage return to the calibrator.

This will set the kV Amplifier to 2000V DC

- D1 Sets kV Amplifier mode on
- R5 Sets 1000V DC Range for kV amplifier
- O200 Sets 2000V Output value
- S0 Turns output on

**Post-Test Command**

This will send the command

**@01 S1/O0/D0/R1>CR**

followed by a carriage return to the calibrator.

This will turn off the kV Amplifier mode and set the outputs to zero at the end of the test.

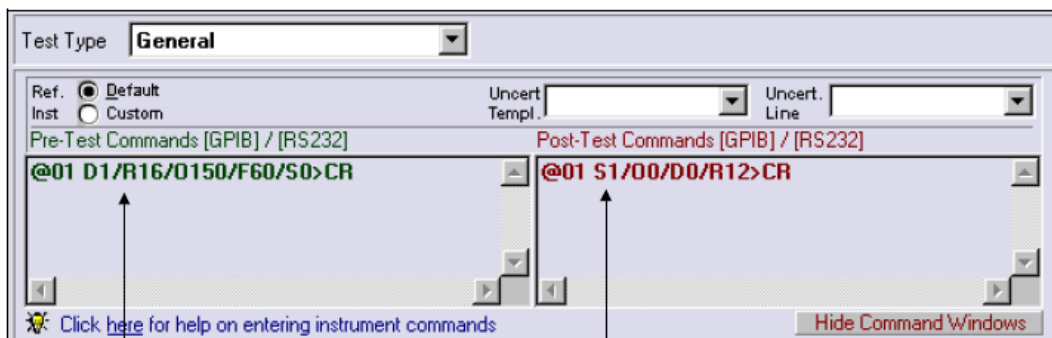
- S1 Turns output off (standby)
- O0 Sets 0V Output value
- D0 Turns off kV Amplifier mode on
- R1 Sets lowest DCV Range

Note : To display a message on the 3000 Series display use the # command, for example

**@01 #kV Amp : 1kV DC>CR**

## AC Voltage

Commands to control the kV amplifier using ProCal can be added to each test of a ProCal procedure. Use the instruments tab in ProEdit, and edit the **pre-test** and **post-test** command boxes to enter commands, as shown below :



### Pre-Test Command

This will send the command

**@01 D1/R16/O150/F60/S0>CR**

followed by a carriage return to the calibrator.

This will set the kV Amplifier to 1500V AC 60Hz

**@01** Directs the command to the COM port of the instrument at position 1 of the traceable instrument list in ProSet, e.g. the 3000 Series calibrator.

**D1** Sets kV Amplifier mode on

**R16** Sets 1000V AC Range for kV amplifier

**O150** Sets 1500V Output value

**F60** Sets 60Hz Frequency

**S0** Turns output on

### Post-Test Command

This will send the command

**@01 S1/O0/D0/R12>CR**

followed by a carriage return to the calibrator.

This will turn off the kV Amplifier mode and set the outputs to zero at the end of the test.

**@01** Directs the command to the COM port of the instrument at position 1 of the traceable instrument list in ProSet, e.g. the 3000 Series calibrator.

**S1** Turns output off (standby)

**O0** Sets 0V Output value

**D0** Turns off kV Amplifier mode on

**R12** Sets lowest ACV Range

Note : To display a message on the 3000 Series display use the # command, for example

**@01 #kV Amp:1kV AC 60Hz>CR**

## **Specifications**

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### **GENERAL SPECIFICATIONS**

Output Connections	2x High Voltage Safety Terminals 1x 4mm Ground Terminal
Control Interface	'D' type connector for use with dedicated 3000 Series kV Amplifier Interface
Dimensions	14cm x 43cm x 46cm
Weight	20kg

### **PERFORMANCE SPECIFICATIONS**

AC Output	5kV Maximum
DC Output	10kV Maximum
AC/DC Accuracy	0.5%
Output Current	100uA
Frequency	DC / 40Hz to 60Hz

## **Care & Maintenance**

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The only maintenance instructions for the EA3024 Transconductance Amplifier is periodic cleaning. See below for details on the cleaning procedure and precautions for handling.

### **Cleaning the EA3024**

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To keep the external enclosure of the EA3024 in good condition, clean the outer case with a soft cloth. Do not use any liquids in cleaning the enclosure – removal of surface dust is all that is recommended.

 **CAUTION**

Do not use cleaning fluids or solvents for cleaning as these may damage the enclosure and affect the plastic materials used in the transconductance amplifier.

### **Handling Precautions**

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The EA3024 is designed for mechanical stability, but should not be subjected to excessive shock or be dropped. Transportation is recommended using the original packaging with avoidance of extreme changes of temperature.

### **Servicing Information**

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The EA3024 is provided certified from the factory, and uses precision components that are not user repairable. If the instrument is damaged it should be returned to the factory for repair and recalibration.