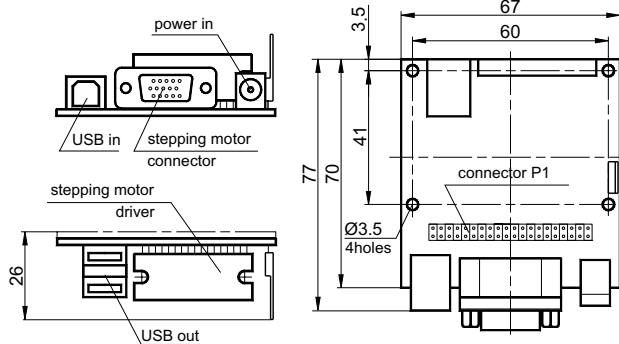


980-0030F-USB STEPPER MOTOR CONTROLLER CARD WITH USB INTERFACE



980-0030F-USB

- PWM chopper type current control (up to 1.5 A per phase)
- Resolution: full step, 1/2, 1/4, 1/8
- Speed: up to 5000 steps/s
- Full featured control software with graphical user interface for Windows 2000/XP/Vista/7 included
- Set of virtual instruments for NI LabView included
- RoHS compliant

SPECIFICATIONS

Electrical

- Targeted for bipolar, two phase stepper motors with current ratings of 0.25A to 1.5 A. The current limit value is set by the manufacturer
- Power supply voltage ranges from 12V to 36V
- Overcurrent, overvoltage and temperature protection
- Synchronization Input and Output
- Encoder Inputs for stall detection (shared with Synchronization Input)
- Revolutions counter input (shared with Synchronization Input)

USB Expansion

- Each 980-0030F-USB controller card comes with an integrated USB hub to allow easy system expansion of additional single- or multi-axis controller cards
- Additional controllers can be connected directly to the computer in use or via any other controller card in the system. In either case the software will appropriately recognize the added controller card(s) and treat all connected controllers as a system
- Two USB expansion ports can be found on each controller card. Note when ordering encased cards that only the single-axis controller has access to the USB expansion outputs on the rear panel of the unit

Motion

- Resolution: full step, 1/2, 1/4, 1/8
- Speed: 2-5000 steps/s
- Programmable speed and trip points
- Programmable acceleration and deceleration ramps
- Soft start/stop mode

Control

- PC control via USB interface
- Optional handheld remote offers manual two button directional control
- Additional features include two programmable limit switches, an emergency limit switch, encoder, and revolution sensor for stall detection and input/output for synchronization

Programming

- Graphical user interface SMCView for Windows 2000/XP/Vista/7
- Drivers and dynamic link library for Windows 2000/XP/Vista/7/Mobile host programming
- Set of virtual instruments for National Instruments LabView

Mechanical

- Operating temperature range: 0 to 70°C
- Box size for 1-axis controller : 90 x 120 x 70 mm
- Box size for 2 and more axis controller : 180 x 120 x 90 mm



980-0233F-USB



980-0234F-USB

Ordering of 980-0030F-USB series circuit card assemblies (CCA)

For added flexibility Eksma Optics offers the 980-0030F-USB series controller in CCA form for ease of integration into custom systems. When ordering the CCA version of the controller the current limit values will still be set by the manufacturer before leaving the factory, but this limit can be changed by the user in the field. The CCA product will also include the USB hub IC and a heatsink for the motor driver IC. Warranty and support options may vary for the CCA version of controller.

ORDERING INFORMATION

Code		Price, EUR
980-0030F-USB	Controller Board	295
980-0131F-USB	1 axis Controller in a box	320
980-0232F-USB	2 axes Controller in a box	550
980-0233F-USB	3 axes Controller in a box	780
980-0234F-USB	4 axes Controller in a box	1010
USB Cable	Cable to a Computer	-

8CA9(F) - 15(M) actuator - standard length is 1.5 m, other lengths are available by request.



980-0131F-USB

OPTICAL TABLES

BRACKETS & RAILS

BASE MOUNTS & ACCESSORIES

OPTICAL MOUNTS

OPTICAL POSITIONERS

BASE POSITIONERS

TRANSLATION & ROTATION STAGES

ADJUSTMENT SCREWS

MOTORIZED POSITIONERS

Manual control of 980-0030F-USB



980-0131F-USB-MC



980-0232F-USB-2MC

The 980-0131F-USB-MC offers a handheld manual control option that allows for two button directional control of the unit in addition to the USB communication, the buttons are labeled "Forward" and "Backward". The "Forward" button is intended for moving the positioner "Forward". The "Backward" button is intended for moving the positioner "Backward". Two LED's indicate direction of movement. The LED of interest will flash to indicate rapid movement and will remain constantly illuminated upon reaching the limit switch.

The handheld remote is usually used for precise manual positioning of the stage during such processes as calibration. Another common application of is for the control of stepper motors when a computer is not easily accessible.

Front panel manual control is available as an option for the 980-0232F-USD-2MC. There are four buttons on this front panel: "Forward Axis1", "Backward Axis1", "Forward Axis2" and "Backward Axis2". There are also four LED indicators to show the direction of movement along with limit switch indication.

Code	Description	Price, EUR
980-0131F-USB-MC	1 axis controller with external wired remote control	390
980-0232F-USB-2MC	2 axis controller with knobs for manual control on box front panel	650

Software Options for 980-0030F-USB controller

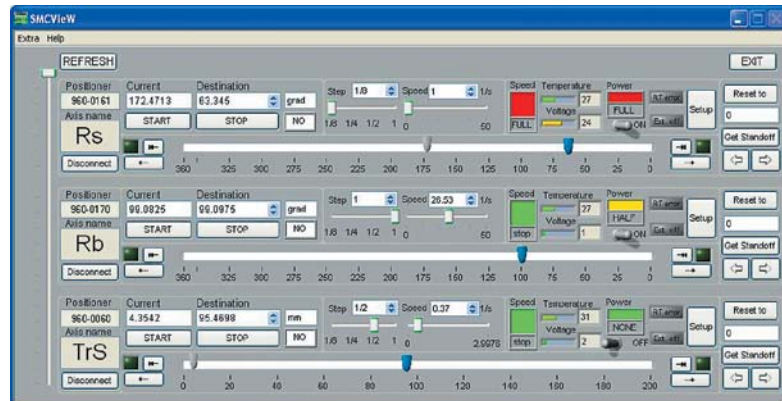
The **980-0030F-USB** comes with a suite of advanced software tools that can be used to control and adjust stepping motors. All software tools operate on Windows 2000/XP/Vista/7.

SMCView is a friendly graphical user interface for controlling, monitoring and adjustment of your stepping motors. It can also be used for easy setup and save/load of all parameters for each stepping motor. Interface supports up to 30 drivers simultaneously.

USMCDLL.dll is a dynamic link library for host programming in **C/C++**, **Visual Basic** and **other languages**. It includes all basic commands for stepping motors control. Some examples of using these functions are also enclosed.

SMC.lib is a set of virtual instruments (VI) for National Instruments LabVIEW 7 programming language. Some examples of using these VI's are also enclosed.

- 980-0030F-USB is a modified version of previous controller board 980-0030-USB with replaced motor connector from DB15(M) to DB15(F).



SMCView main screen example. Three 980-0030F-USB drives found.

POWER SUPPLY



PUP120-17-B1

A 12V – 36V, 1.5A – 3.6 A power supply is required to operate the controller. You can use your own power supply or the following power supplies:

- model **PSA18U-120** (12 V; 1.5 A)
- model **PSC30U-120** (12 V; 2.5 A)
- model **PUP120-17-B1** (36 V; 3.34 A)
- model **GS60A24-P1** (24 V; 2.5 A).

See page 8.186

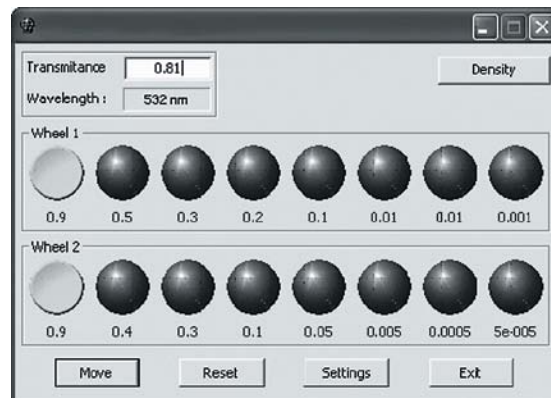
Applications of 980-0030F-USB

Users can connect 980-0030F-USB various stepper motors using “bipolar, two phase” connection. We offer many motorized stages that can be driven by 980-0030F-USB: actuators, rotators, translators, variable wheel attenuators. These stages also can be mechanically fixed to various systems: XYZ translators, translators + rotator and others.

There are several possibilities to initiate movement actions for mentioned stages connected to 980-0030F-USB: by manual push buttons or by software. Using of software allows automated motion actions required for various scientific experiments or for industrial complex multidimensional movement shape execution. The 980-0030F-USB comes with a suite of advanced software tools that can be utilized to control and adjust your stepping motors. All software tools operate on Windows 2000/XP/Vista/7:

- **USMCDLL.dll** is a dynamic link library for host programming in C/C++, Visual Basic and other languages. It includes all basic commands for stepping motor control. Some examples of these functions are also enclosed.
- **SMC.lib** is a set of virtual instruments (VI) for National Instruments LabView programming language. Some examples of these VI's are also included.
- **USMCDLL.dll** for Microsoft Windows Mobile 5.0 (which have just the same functionality as USMCDLL.dll for Microsoft Windows XP).
- **SMCView** is a friendly graphical user interface for control, monitoring and tuning your stepping motors. It can also be used for easy setup and save/load of all parameters for each stepping motor. Interface supports up to 30 drivers simultaneously.

- **Cyclic Motion** program - allows motion “from limit switch to limit switch” or “from point to point”. Included in SMCview inside “Extras” menu.
- **2D Motion** - allows driving two 980-0030F-USB controllers connected in schematic “XY translator”. Included in SMCview inside “Extras” menu, may require separate license.
- **ENGRAVING add-on** - allows driving three 980-0030F-USB controllers connected in schematic “XYZ translator + laser beam shutter”. Included in SMCview inside “Extras” menu, may require separate license.
- **3D Motion** - allows driving three 980-0030F-USB controllers connected in schematic “XYZ translator”. Included in SMCview inside “Extras” menu, may require separate license.
- **ATTENUATOR** program – this separate program allows driving Motorized Variable Wheel Attenuator (991-0602, 991-0702). May require separate license.



ATTENUATOR program main screen example

IMPORTANT INFORMATION

Warning: The Power driver IC fin (rear) is electrically connected to the rear of the chip. When current flows to the fin, the Power driver IC malfunctions. If there is any possibility of a voltage being generated between the ground of the 980-0030F-USB and the fin, either ground the fin or insulate it.

Warning: There are appreciable power dissipation on Power driver (up to 6 W depending on input voltage and rated current of stepper motor). Appropriate heatsink must be used to maintain temperature range. Heating the Power driver over 85 °C is forbidden!

Warning: Current sense resistors must be chosen for every stepper motor according to its rated current and connection diagram. For more details see 4.2.1. of User Manual. Wrong current sense resistors can cause the malfunction of 980-0030F-USB or damage stepper motor.

Warning: There is some power dissipation on Voltage regulator (up to 0.5 W depending on input voltage). Appropriate heatsink may be required. Heating the Voltage regulator over 85 °C is forbidden!

Warning: 980-0030F-USB power supply must never exceed 36 V. Power driver can be damaged if such exceeding happened.

Warning: If a single power supply mode is used, make sure that input voltage is not exceeding 12 V. Otherwise the overheating of the Voltage regulator may happen. Heating the Voltage regulator over 85 °C is forbidden!

Warning: Make sure that there are no contact between stepping motor phase windings and 980-0030F-USB ground. Power driver will be damaged obligatory if such grounding present.

Warning: You must never connect to, or disconnect from the 980-0030F-USB any stepping motors while the controller keeps currents in the motor windings. Power driver can be damaged if such reconnection happened.