T440 Simple Projector Controller

This device is a budget-priced wired (RS232 and limited IR) remote controller for video projectors and flat panels, allowing simple On-Off control, channel/source selection and optionally, audio level control or freeze/mute functions. Ease of setup and installation has been an important design criterion, and this has been achieved by providing a database of pre-coded projector code families in all units, so all have identical software (which is field up-dateable). At install time, or whenever options (or projectors) are changed in a room, the changes are made by selecting device families with hex switches on the back of the unit.

Except for a major code upgrade for totally new devices, a laptop is never needed at install/setup time. There is ¼ Mbyte of memory in the unit for data-base storage.

Pre-made keyboards.

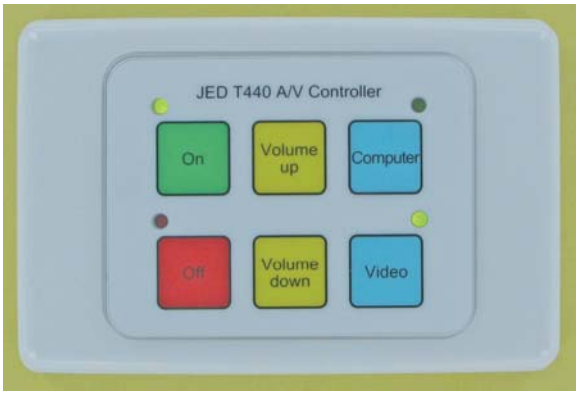
The keyboard is pre-made for the options needed and so there is no need to cut out bits of paper and slide them into switches, or print custom front key-legend sheets and fit them into windows … there are a series of standard layouts premade out of high quality, rear-printed polycarbonate matt material, and the key option is set on another hex switch.

The switches are tactile domes which give a good “feel” to the user.

LEDs indicate system states.

A number of coloured LEDs are associated with keys, and these are steady or flashed to signal to the user the current state of the system. (Note: No feedback from the projector is possible in the IR mode, no red LED flash status indication is possible, and because there is no absolute source selection with the initial IR device done, there is no initial channel selection possible during warmup.) The system shows operation as follows:

- On power on (not IR), (or whenever a user presses the OFF button in the OFF state), the T440 polls the projector/flat panel for a status response indicating it, too is in the OFF state. A “Power Off” transmission is sent, to make sure the system is synchronised to the controller. At this point, the RED LED associated with the OFF key flashes once, if a proper “Off status OK” is received, and three times if it is not. (Some projectors don’t respond in the “Off” state so for these, the OFF LED just goes on.) The RED LED then stays ON to show the user the status of the whole system. This is a valuable test for users and installers, as it is so easy to test communications, with just one button press;
- When the user presses the ON key, a “Power On” command is sent, and the projector warms up for the preprogrammed time for that family. The GREEN ON LED flashes at a one-second rate during this time. During this time, the OFF key is locked out, but the channel/source (to be sent at the end of the warm-upcan be pre-selected) (not IR);
- As the T440 warm-up time finishes, the GREEN ON LED remains ON (still) and the channel which was last used is re-sent to the projector (not IR) (unless this was changed by pre-selecting during the warm-up period.)



The particular channel LED is ON from the start of warm-up, and it blinks and then continues to show the current channel;

- During the ON time, as the user changes channels, the GREEN CHANNEL LEDs follow the selection, and as the command is sent, they blink in acknowledgement as a command is sent;

- At the end of a lesson/show, the user presses the OFF button, and the RED OFF LED then flashes once per second for the programmed cool-down period of that device. (With IR, the “Power” command is sent twice to simulate the request to push the “Power” key on an IR hand-held remote twice.) All other LEDs are turned OFF and keys are locked out; and

- At the end of the cool-down time, we are back at the start, with the OFF LED flashing once/twice/three times as a communications check occurs (not IR).

(While the LEDs are fairly intuitive as to what they display, they are not going to be as informative as the two-line LCD display on the T460, which can show details of lamp hours, screen operation, connected devices, warm-up/cool-down “times to go”, and have chosen or user-defined custom channel names displayed as channels are selected. If more information like this is needed, maybe the JED T460 should be the chosen device.)

PIR input for automatic turnoff

A contact-close/open input allows an infra-red “people-detector” to sense whether all the class and presenter has left the building, leaving the video equipment running. The nominal time is one hour to closedown without a contact interruption, but this time can be programmed using the switches. (PIR stands for “Passive Infra-Red”.)

Rear-view of the T440

Looking at the back of the T440 shows the connections and the setup switches.

Connections:
Across the bottom, right-to-left, are Phoenix plug-in screw terminals for wiring to the outside world. (shown without the plug-in part) They are:

- Projector RS232 serial connection: same pinout as the T460, with Ground, Tx (data out), Rx (projector reply) and CTS (optional, infrequently used);

- Auxiliary RS232 serial connection: used for download but could be used for future external serial connections,
eg to the T461 audio controller;

- At the far left is the power input, in the range of 9 to 30 volts. Current is under 50mA but depends on voltage;

- Optional: Relay drive out, intended for screen control.

- Optional: IR transmitter output: now implemented for Epson X5/X5e;

- At the top left is three-terminal connection with two inputs, one for the PIR input the other is unallocated at the moment. This could be used as a security (key) or card reader input.

- Just to the right of this is a two-pin connector with a drive to a third relay for audio system or other power control.

Just below this input connector is a CAT5 socket. This is a quick wiring option for the communications/power/PIR to the T447 “cable-top” box which provides terminations to the projector (DB9), power in socket, and PIR screw terminals. (It is NOT an Ethernet connection.)

Switches:

- Two hex switches providing “Program Select” to select an entry in the data-base of projector/flat panels. It needs a screwdriver to select codes from 00 to FF. These switches are also used for constant entry (closedown time controlled via PIR, warmup times, alternate channel selections etc;

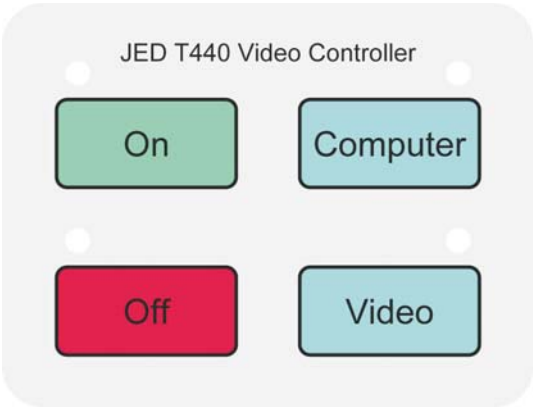
- One hex switch (at the top) to select the keyboard type installed, from the choice of 4, 6 or 8 key units;

- One 8-position “Option” switch, allowing installers to select, eg alternate video source, auto-send of pixel align, etc;

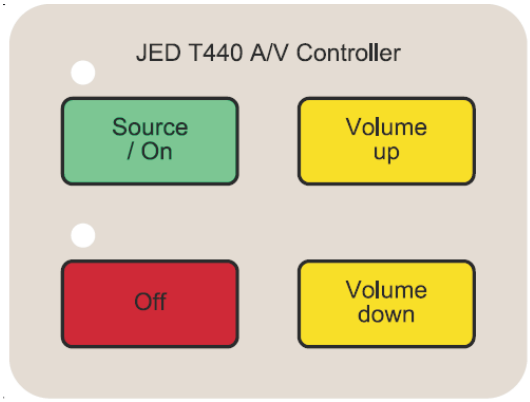
- One “Reset” switch yellow slide switch (or push--button on latest revision), used to enter “program re-load” or manually set options like time delays, etc.

Keyboards

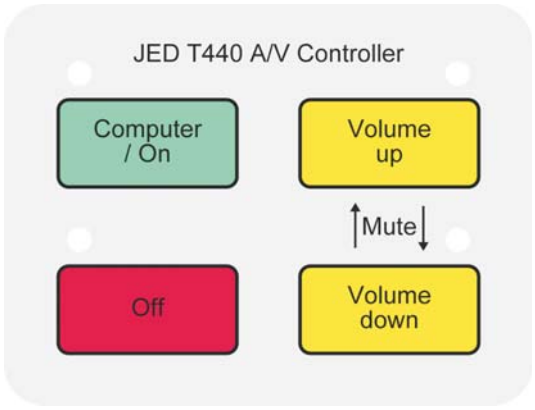
Following are keyboard options listed by ordering code:



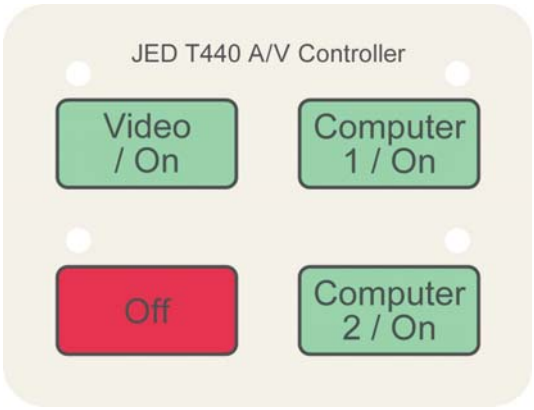
Four key, code



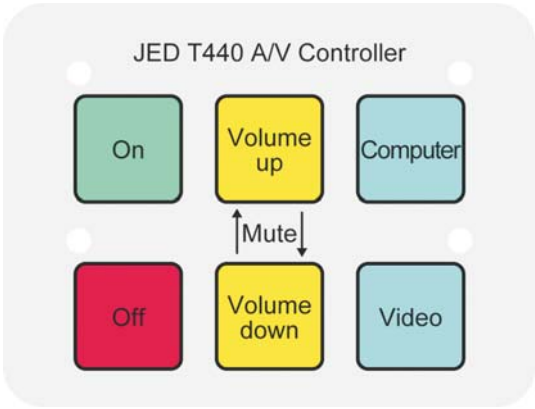
Four key, code 1 (IR)



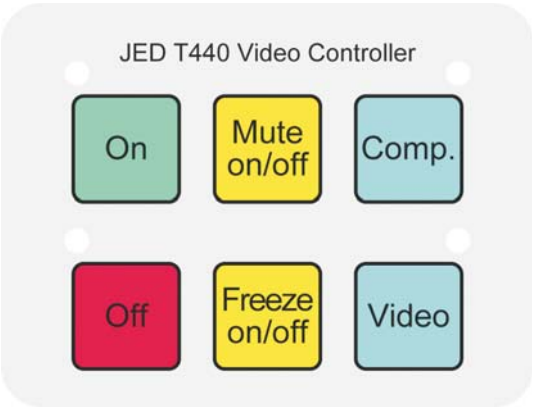
Four key, code 2



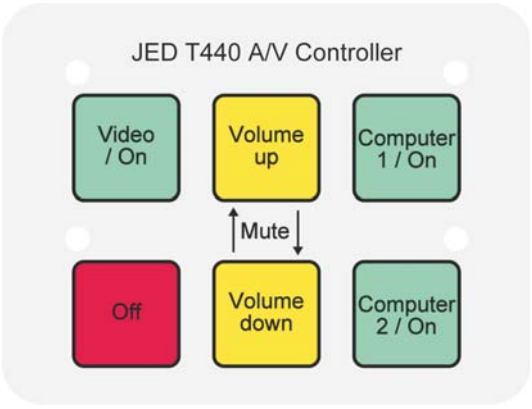
Four key, code 5



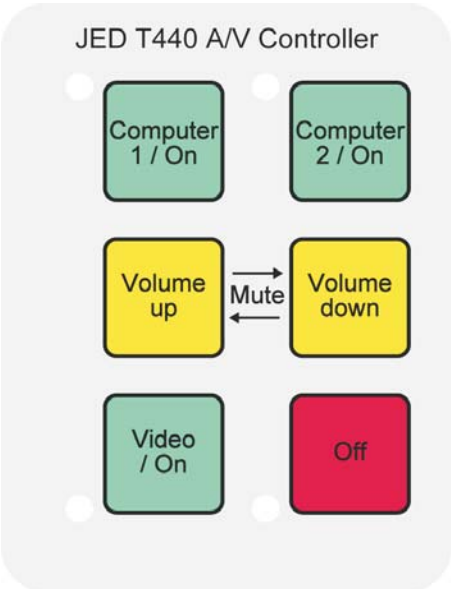
Six key, code 9



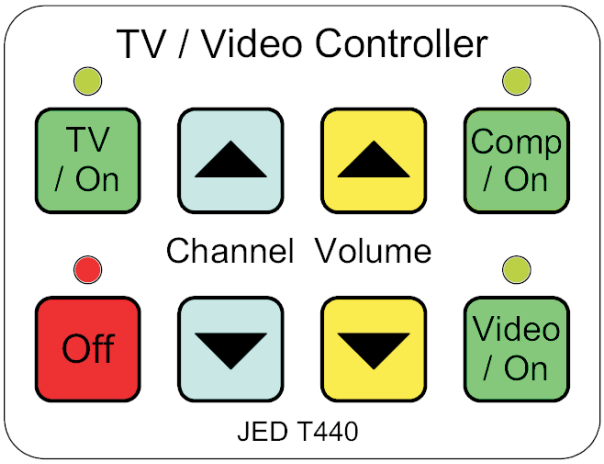
Six key, code A



Six key landscape, code B-L



Six key landscape, code B-P



Eight-key TV controller, Code E

(The 8-key TV controller option controls LCD or Plasma display/TV systems.)

Projector families supported

The projector codes are selected by the two-digit hex switches on the back, and many projectors are supported by a particular driver. Minor variations are supported by allocating adjacent codes (eg supporting absolute or incremental audio volume setting or different reply or channel codes.)

As at Rev 014 the supported families are:

Acer PD727, P1165, P1265, P5260, P5270, P5280, P5370
BenQ MP5/7xx, SP820,Opt 771
Epson VP21, X5 via IR
HP projector
Hitachi proj
Infocus
LG LCD/Plasma TV
Mitsubishi
NEC LCD TV (& Sherwood), Plasma
And NEC Projector
Optoma
Panasonic Projector
Plus U5, U7 Projector
Sanyo LCD TV, projector
Sharp
Sony projector
Toshiba projector
Taxan projector

For any dealership enquiries and pricing please contact Colin Sachs on:

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