AccessionIndex: TCD-SCSS-T.20250529.001
Accession Date: 29-May-2025
Accession By: Dr.Brian Coghlan
Object name: DEC PDP-10 replica front panel
Vintage: c.2025
Synopsis: PiDP-10, modern replica of the PDP-10 mainframe computer front panel, with emulation by a Raspberry Pi.

Description:
This item is a modern replica of the PDP-10 minicomputer front panel built from a kit of components sourced by Oscar Vermeulen in Switzerland, see [1], plus a Raspberry Pi 3 Model B+. The functions are emulated by a modified version of MIT's software simulator SimH [2] running on the Raspberry Pi mounted on the rear of the unit.

The PDP-10 [3], introduced in 1966 by Digital Equipment Corporation (DEC), was a reimplementation of the architecture of the PDP-6 [4] first introduced in 1964. The PDP-6 used the unreliable early germanium transistors in *System Modules* (as in DEC's earlier PDP-1 and PDP-4); only 23 were sold. The initial PDP-10 *KA10* CPUs used the later more reliable silicon transistors in newer *Flip-Chip Modules* (with a cycle time of 1μs and an add time of 2.1μs), with up to 256kwords of memory plus segmented virtual memory. This was replaced in 1973 by the *KI10* using TTL logic with up to 4Mwords of memory plus paged virtual memory, then in 1975 by the *KL10* using ECL logic (achieving ~1Mflop). Subsequently DEC introduced the PDP-20 (identical in all but colour and operating system). The PDP-10 and PDP-20 ran the TOPS-10 and TOPS-20 operating systems.

The PDP-6, PDP-10 and PDP-20 were mostly object-code-compatible, with 36-bit words (in that era words were often a multiple of 6-bit character codes). User-mode instructions supported 18-bit and 36-bit two's complement integer and 36-bit and 72-bit floating-point datatypes. Additional *byte* instructions operated on bit-fields of any size from 1-36 bits. Sixteen 36-bit registers supporting indexing, while a *PC-word* register contained 18-bit program counter and status fields. Supervisor-mode could execute these instructions and also input/output operations.

At MIT's Artifical Intelligence Lab, the PDP-10 and its ITS operating system became a famous playground for computer scientists and hackers [5].

Many thanks to Brian Coghlan for donating this item.

The homepage for this catalog is at: https://www.scss.tcd.ie/SCSSTreasuresCatalog/
Click *'Accession Index'* (1st column listed) for related folder, or *'About'* for further guidance.
Some of the items below may be more properly part of other categories of this catalog,
but are listed here for convenience.

Accession Index	Object with Identification
TCD-SCSS-T.20250529.001	DEC PDP-10 replica front panel. PiDP-10, modern replica of the PDP-10 mainframe computer front panel, with emulation by a Raspberry Pi. c.2025.
TCD-SCSS-T.20191108.002	DEC PDP-11/70 replica front panel. PiDP-11/70, modern replica of the PDP-11/70 minicomputer front panel, with emulation by a Raspberry Pi. c.2019.
TCD-SCSS-T.20151118.003	DEC PDP 11/84. Late model of the popular PDP-11 series made by DEC, with two RL02 disk drives and THR7000 external drive unit. S/N: ???. c.1985.
TCD-SCSS-T.20150615.001	DEC PDP 11/34. Rackmounted minicomputer with octal keypad, with RL01 disk drive and LA36 DECwriter printer, from the first dedicated TCD Library computer system. S/N: ??? c.1976.
TCD-SCSS-T.20150615.002	DEC PDP 11/24. Rackmounted minicomputer, with associated cartridge disks and documentation. S/N: ??? c.1981.
TCD-SCSS-T.20211003.001	DEC PDP 11/34. Rackmountable minicomputer with octal keypad. S/N: ??? c.1976.
TCD-SCSS-T.20151118.004	DEC M792E Unibus Boot ROM Board. Early diode-array ROM for booting the popular PDP-11 series made by DEC. Date-stamped 18-Sep-1974. c.1974.
TCD-SCSS-T.20121208.036	DEC VAX 11/780 LA120 Console Processor. LSI-11 based PDP11 console processor from VAX mainframe used by Dept.Computer Science from 1979-1988 (LSI-11 uses same WD9000 chipset as WD90 Pascal Microengine, see elsewhere in collection). c.1978.

References:

1. Obsolescence Guaranteed, *PiDP-10: Recreating the PDP-10 at the MIT AI LAB*,
    see: https://obsolescence.wixsite.com/obsolescence/pidp10
    Last browsed to on 29-May-2025.

2. simh.trailing-edge.com, *Computer Simulation and History*, see:
    http://simh.trailing-edge.com/
    https://en.wikipedia.org/wiki/SIMH
    Last browsed to on 8-Nov-2019.

3. Wikipedia, *PDP-10*, see:
    https://en.wikipedia.org/wiki/PDP-10
    Last browsed to on 30-May-2025.

4.   Wikipedia, *PDP-6*, see:
     https://en.wikipedia.org/wiki/PDP-6
     Last browsed to on 30-May-2025.

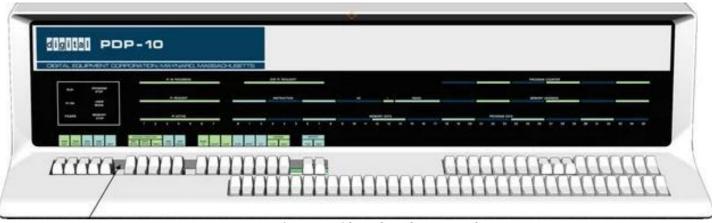5.   Steven Levy, *Hackers: Heroes of the Computer Revolution*, ISBN: 0-385-19195-2, Doubleday, 1984.

Figure 1: PiDP-10 replica front panel.