

Product Guide



Thanks for choosing a RealSimWorld product. This Advanced Threat Display or ATD is a computer gaming peripheral designed to work on a PC as a standard DirectX gamepad. It simulates the Terma Advanced Threat Display unit, and can be used for computer gaming such as air combat flight simulations.

www.RealsimWorld.com

Packing List

While unboxing, please carefully identify each item on the following list. Make sure none is missing, and only use the supplied accessories with the product.

Advanced Threat Display x 1
Product Guide (this guide itself) x 1
1.5m Type-A to Type-B USB cable with ferrite x 1
1.2m Ø5x2.1mm DC power cable x 1
1.2m Ø3.5x1.35mm DC power cable x 1

Specifications:

Display	QVGA (640x480) TFT LCD 16bit RGB
Keypad	DirectInput gamepad, 16 buttons
Input Interface	USB 2.0 full speed through type-B female receptacle
Output Interface	VGA (15Pin D-Sub) female receptacle
Power Supply	12VDC 2A main supply (exposed leads) 0~5VDC adjustable voltage, any amperage AUX supply (exposed leads)
Backlight	Dimmable through two modes

Proper Grounding

Professional gamers often build multiple power supplies into their simulator hardware. It's imperative that these power supplies share the same ground, preferably earthing at the same location (a star topology). One or more power

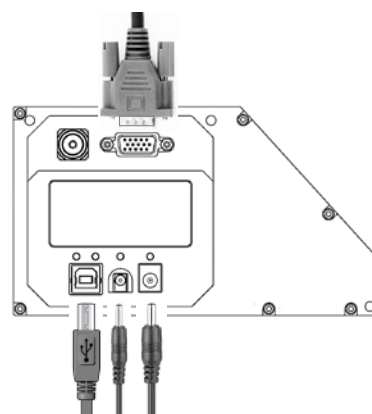
supplies with its ground floating poses a potential threat of damaging sensitive electronic parts with unintended electric current discharges.

A DC supply with a three-pin power plug is highly recommended for cockpit building. Small AC-DC power adaptors with only two leads for the mains should be taken special care of, as the Class-Y capacitors within are capable of leaking small amount of current from the live wire. When the output is left floating, the voltage between the output ground and the earth may reach half as high as the mains supply voltage.

This potential is abruptly equalized when the output is connected to anything at a different potential, resulting in a sudden EMI discharge which could disrupt ongoing communication, freeze the computer or even permanently damage sensitive components. In order to protect the ATD and other devices in your cockpit, please make sure the devices' chassis are properly grounded if the power supplies themselves can't be.

Wiring Up

The ATD features a VGA display, a USB keypad and a keypad backlight driving module. Special design has been implemented for advanced gamers to utilize their own backlight dimming circuits. Access to basic keypad inputs only requires one USB cable. However, all cables are required for advanced functionalities.



There are also 4 LED indicators located above the connectors on the rear panel, labeled with the following text on the sticker.

USB PWR	USB Power present. This red LED turns ON once USB is plugged in.
KEY INPUT	This green LED indicates a key press on any of the keys on the keypad.
AUX 5V PWR	This blue LED serves as a status indicator for the Auxiliary 5V Power.
12V PWR	12V Power present. This red LED turns ON when 12V main supply is connected.

DC power supplies are NOT included with the ATD because of different mains standards adopted in different regions across the globe. Furthermore, many cockpit builders use custom-made power systems for advanced lighting control in their cockpits. As a result, wires within the supply cables have had their tips stripped and tinned with solder for maximum flexibility. The wires are color coded, red for positive and black for negative (referred to as ground).

For the main supply, use the Ø5mm power cable. Connect its black wire to the ground input of a properly earthed power supply, and its red wire to the positive. Make sure the supply voltage doesn't significantly exceed 12V.

Ground the black wire in the AUX supply cable similarly, and connect its red wire to your customized dimming circuit's voltage outlet. The ATD can handle up to 12VDC or AC on the AUX input for extended period of time without any damages. But it's recommended to keep the AUX voltage within 5.3V.

When the cables are properly wired up, please double check the supply polarity before plugging them into the ATD. The metal circumferences of the plugs are the ground and the center holes should be positive supply.

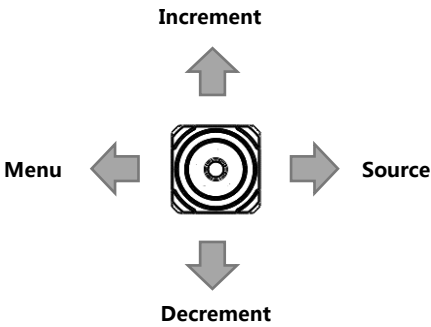
Connect the USB and VGA cables to corresponding receptacles. Windows will prompt for a driver if it's the first time such a device is plugged in. The driver and RSW Console software are both available on our website for download.

The ATD uses AUX supply as the default backlight dimming source. Power up the 12V main supply and change the AUX supply voltage, the brightness of the keypad backlight should change accordingly, which indicates cables have been correctly wired up.

Display Setup

When the ATD is connected with a computer's graphic output through a VGA cable, it's accessible through Windows *Screen Resolution* page. The TFT screen works best at 640 by 480 High Color (16 bit), 60Hertz setting. The visible window on the physical ATD measures roughly 470 x 470 pixels, and it's recommended to set both the width and height at 472px on the GUI. Please visit our website for more details on how to setup the GUI for the ATD.

The 5-way hat switch at the back side of the ATD offers extra options to tweak the display. It is a self-contained controller for the TFT display unit inside. Pressing down or tilting the switch in four directions would activate respective functions illustrated below.



Power	Pressing down on the center pole cycles the power to the display ON and OFF.
Menu	In order to adjust the various parameters built in the TFT, use Menu to activate the OSD menu, and use Menu again to cycle through parameters.
Increment	Increase currently selected value.
Decrement	Decrease currently selected value.
Source	Reserved. Although the TFT accepts AV signal from a secondary source, this ATD has not implemented an AV inlet on its hardware.

Keypad Inputs

The ATD's keypad is visible as a generic gamepad named "ATD" on the *Devices and Printers* page in Windows. Its buttons are shown on the corresponding *Property Sheet* of the gamepad. All computer programs and games which support DirectInput would automatically recognize the keypad.

Please setup the functions of each button in the game you are playing. Or visit our website for more instructions.

Keypad Backlight

The keypad is fitted with either NVIS green or warm white backlight. As part of the cockpit's lighting environment, the ATD keypad is designed to accept external power supply as its backlight dimming source (manual control). This feature is initialized by the factory as default configuration. Cockpit builders who prefer their own power supplies may feed their adjustable power into the ATD's AUX supply input through the Ø3.5mm power cable.

There is, however, a software controlled mode for backlight dimming. An option for switching between these modes is provided within the RSW Console software along with a range of advanced functionalities. Please download the latest RSW Console software from our website before proceeding with the following guidelines.

The ATD backlight exhibits similar characteristics with that of regular LEDs or incandescent light bulbs when responding to voltage changes from AUX supply. It doesn't switch ON before the AUX supply reaches above 1.9V. The AUX 5V PWR blue indicator LED on the rear panel also stays OFF accordingly.

The brightness is linearly adjustable when AUX supply varies between 1.9V and 5.2V. While the blue indicator LED turns and stays ON.

If the voltage at the AUX power supply somehow exceeds 5.5V, the ATD would automatically send out a warning message to RSW Console, which would be visible as a red "Over-voltage" warning located in the *Manual Control* section. At the same time, the blue indicator LED would keep flashing rapidly until AUX supply voltage drops within nominal range.

When the ATD is dimmed from a same source along with other panels and instruments in the cockpit, sometimes it gets too dim at its minimum point or too bright at its maximum point compared with neighboring instruments.

RealSimWorld has implemented a two-point curve trimming feature with the ATD's backlight. Dead Zone defines the minimum brightness before backlight shuts down, and Saturation defines the maximum brightness. These values are accessible through RSW Console. A more detailed instruction on how to adjust these settings is provided on our website.

All changes made to the ATD's settings are automatically saved into a memory chip. The saved settings are automatically uploaded to the software next time RSW Console is connected with the device.

Falcon BMS

RealSimWorld Console detects Falcon BMS activities. When the game is running, the text in the bottom of the software should read *Falcon BMS Running*. Though at this point, no further shared memory access is implemented on the ATD.

More product information is available on our website.
Please visit www.RealSimWorld.com for regular updates.