

Directional Explosive Sentry Unit

Designed by the UMC, this device has been developed to serve as a means of defending installations or valuable assets from intrusion by power armor or infantry personnel. The directional explosive sentry unit is a multi-application and multi-configuration system which can be outfitted for specific operations.

Produced By: United Manufacturing Cooperative

Fielded by: United Manufacturing Cooperative and Affiliates

Usage: Directed Explosive Device / Directed Mine

Structural Information

The DESU system comes in 24x24x6 inch (Large), 12x12x3 inch (Medium), and 6x6x1 inch (Small) variants. It consists of a box-like exterior frame, and a charge interface area which can allow for an additional charge system to be placed over the primary shaped explosive charge. The rear of the DESU includes mounting assemblies to allow for the DESU to be fixed on a number of locations. One side of the DESU's edges can be identified as the interface area due to the presence of a number of interface systems including the key-interface and time-input interface.

Technical Information

The "Directional Explosive Sentry Unit" or DESU¹⁾, is comprised of a nerimium clad durandium housing. Within the housing of the unit are several key components which are the following:

IFF & Conventional Sensor

The Identify Friend or Foe and Conventional Sensor system is comprised of a radio-wave and subspace radio transmitter and receiver system. The system functions by utilizing several forms of radiation transmission and reception to monitor the target area set.

Identify Friend or Foe

The DESU is capable of identifying friendly transponder or networking signals. This function allows for the DESU to quickly confirm the identity of a target which crosses into the DESU's targeted area. The system functions through passive reception of network-interface signals, transponder transmissions, and comm-line transmissions.

Sensor System

The DESU incorporates simple sensor technology which allows it to maintain a minimal sensor profile while being able to detect a majority of potential intruders. The DESU incorporates the following sensor systems.

- **Vibration Sensors:** These sensors monitor surface and air vibration for disturbances consistent to personnel movement or propulsion system displacement. The sensor is capable of identifying many vibration patterns to eliminate false-positives such as small animals, excessive wind, rain, or other common-place occurrences. This system can also be configured for identification of sounds, such as voice identification.
- **Passive Multi-Electromagnetic Sensor:** Included in the DESU's radio receiver assembly, the Passive Multi-Electromagnetic Sensor, or PMS is mounted on the exterior of the DESU. The passive sensor is a non-transmitter and can only receive information. This sensor monitors multiple forms of electromagnetic radiation. visible light, radio waves, infrared, ultraviolet, thermal infrared, microwaves, and transmitted radio waves (radar, communications). This receiver is capable of identifying disruptions to the conventional electromagnetic fields which are in its target area. It is capable of cross-checking the detected disturbance with pre-programmed 'natural' disturbances²⁾.
- **Active Sensor System:** Or, unfortunately abbreviated, ASS. The ASS is a system which utilizes active sensor modes to identify objects within the target area of the DESU. This system functions by establishing multiple short-range electromagnetic fields within the target area. Low-intensity X-rays, microwaves, magnetic field, infrared, ultraviolet, and non-visible laser systems are used to establish the detection area. Disturbances to the conventional behavior of any one of these forms of electromagnetic fields is received by the PMS where it is then interpreted by the system to be either a target or a non-target.

Arming & Triggering Systems

There are several ways to arm the DESU, remotely, physically, and automatically. Each mode is as follows:

Remote Arming & Disarming

This system relies on maintaining communication contact with the DESU when it is deployed. A remote system can be used to activate, deactivate, or trigger the DESU. Activation and deactivation requires a specific input code transmitted on a specific designated radio-frequency. After three input failures, the DESU automatically is set to automatic detonation mode. To aid operators in knowing when the DESU is placed from remote mode to automatic mode, a short data message is sent by the DESU. Quite simply a message of "DESU DESU DESU". The message has been designed as such so it can be simple to identify.

Physical Interface

The DESU is designed to also receive external physical input. There are several methods for external physical interface for the arming and triggering of the DESU. Arming can be physically achieved through the use of a [Pico-Jelly](#) key system. This interface allows for an operator to select one of several options which can be selected by turning the key. The options are: Disarmed, automatic, remote, trip, timed, and active.

Disarmed

The standard inactive and safe storage-state of the DESU.

Automatic

This selection places the DESU into automatic detection and detonation mode one minute after it's selection. During the one minute duration, the operator has the option of de-activation the DESU by selecting the 'Disarmed' option. Once automatic detection is activated, the DESU relies on it's sensor systems to determine when it will detonate.

Remote

When set to remote, the DESU can be interfaced with a remote radio detonator which would control it's detonation. This option requires input from an operator to determine when the DESU will detonate. Additionally, this option can be used to remotely activate and de-activate the DESU's automatic function.

Trip

This function allows for a trip-wire attached to an included detonator pin to be fixed into a small port on the DESU. This trip wire would function to activate the DESU's explosive charge or to set a timer which would then count-down to the detonation. Trip wires which can be used consist of the traditional wire which requires the target to physically pull or trip on the wire. An alternate electrical-circuit system can be used which can allow for an operator to set up a triggering system which relies on an electrical circuit to be closed before the DESU is triggered or the timer is set.

Timed

The DESU can be set for a timed detonation. The timer interface is located beside the pico-jelly key interface and consists of a simple thumb-wheel dial. A three second lack of input into the timer system after initial input causes the timer interface to be placed in a 'locked' state, thus preventing tampering with the time allotted.

Active

The 'Active' trigger system for the DESU relies on a constant data-stream being maintained with the DESU. If the data-stream is terminated the DESU would detonate. The DESU can be configured to receive a wide range of data streams, from individual life-sign monitor systems to starship transponder systems. When the configured data stream is interrupted, the DESU would interpret that discontinuation as a trigger command.

Communication System

The DESU incorporates a subspace receiver, radio transmitter-receiver, and a wired-connection. The communication system is configured to only receive pre-designated friendly signals which also include an identification code. Once identified, the friendly signal can receive data from the DESU, give simple yes, no, and detonate instructions, and designate other transmission and receiver functions which would allow for a detonation device to be configured to the DESU.

Sensor Accuracy Disruption

The "Sensor Accuracy Disruption", or SAD, system is designed to serve as a counter-detection measure. The SAD can be configured to a number of disruption modes.

Active Sensor Disruption

The SAD can actively disrupt sensors by using it's active sensor system to produce high levels of electromagnetic radiation. These high levels of EM radiation would prevent positive identification of the DESU's genuine location, or even it's presence if in an area with other EM sources.

Active Sensor Deception

The SAD system can passively disrupt sensors by overlaying an interfering electromagnetic field over the DESU's natural EM field. This disruption can make the DESU appear as a rock, a scrap of metal, or even a small animal to a majority of EM reliant sensors.

Passive Sensor Disruption

The DESU includes a layer of [Sitearium](#) material which serves to disguise the DESU from optical or electromagnetic detection. Along with the sitearium layer, the DESU also includes an insulation layer which prevents excessive heat bleed-off. This protection measure can be deactivated remotely to permit for user interface.

Note: An additional layer of low-power chemical explosive is placed upon the underside of the sitarium coating. This low-power charge is designed to effectively vaporise the sitarium after the DESU's detonation, preventing samples of the material from being taken. Removal of the sitarium material also triggers a chemical reaction within the compound which results in an external detonation. Thus effectively vaporising the exterior sitarium coating.

Power System

The DESU utilizes a small **QNC** which is nestled near the explosive charge. When the DESU detonates, the explosive charge effectively destroys the QNC preventing the power system from being pulled from the DESU after detonation.

Low Power Gravitational Field Generator

A low power gravitational field generator device is included in the DESU. This device allows for the DESU to be suspended in mid-air. This system also provides protection against scalar based weapon system sweeps. The DESU's low power gravitational field generator can be activated by remote interface, or by removing the purple tagged tab which is placed near the time dial mechanism

Mounting System

The DESU includes an automated mounting system which includes a small electromagnet driven 'spike' which can allow it to effectively anchor itself upon an object. The spike is activated by pulling a yellow-tagged tab located near the pico-jelly key interface. The DESU also includes a set of pull-out hooks which would allow it to be suspended upon an object. Along with these means, the DESU includes an adhesive strip with a peel-off backing which would allow for the DESU to be stuck upon an object. An additional adhesive strip is located around the explosive side of the DESU and is also covered by a peel-away backing. This front-side strip is designed to allow the DESU to be stuck onto an intended target objective.

Explosive Charge Technical Information

The DESU is designed to have a single primary explosive shaped charge which is located on one of large flat sides of the DESU. It is clearly indicated by an indenture in the surface of the DESU's exterior and a series of engraved markings indicating "EXPLOSIVE DIRECTIONAL CHARGE". There are three sizes of DESU, small, medium, and large.




NOTE: All ranges listed indicate of optimal kill-range.

Primary Explosive Charge

The primary explosive charge is a shaped charge which utilizes conventional chemical explosive technology to produce an explosion which is shaped by an exterior layer of soft-metal material. With the heat produced by the explosion the soft-metal is shaped into a spike like shape and propelled from the DESU and at the target area along with a sum of shrapnel. Alternatively, the exterior plate can be removed from the charge to allow for the DESU to function as an incendiary explosive or to allow for another explosive system to be placed over the primary charge. Note, the DESU's primary explosive charge also produces a loud bang and flash, designed to effectively deafen and blind a majority of organic combatants in the target cone area.

Damage Ratings & Ranges

- Small DESU: Tier 3, Heavy Anti-Personnel, Up to 50 meters distance, 45 degree cone.
- Medium DESU: Tier 4, Light Anti-Armor, Up to 75 meters distance, 50 degree cone.
- Large DESU: Tier 5 or Tier 6, Medium Anti-Armor or Heavy Anti-Armor ( : Staff needs to determine which), Up to 100 meters distance, 60 degree cone.


Alternative Ordinance Attachments

With the removal of the soft-metal exterior covering over the primary charge, an alternative form of ordinance can be placed over the primary charge which would then function as a triggering charge. Alternative ordinance attachments available are as follows.

Plasma Charge

A pressurized plasma container can be placed over the DESU's primary charge. This specialized container is designed to interface with the DESU's QNC to provide it with power to maintain the plasma charge heat and intensity. When the DESU is detonated, the pressurized plasma contained within the charge is evenly released in an explosive decompression. Due to the involved components, this option is only available for medium and large DESU types.


Damage Ratings & Ranges

- Medium DESU: Tier 5 or Tier 6, Medium Anti-Armor or Heavy Anti-Armor ( : Staff needs to determine which), incendiary damage up to 100 meters distance, 60 degree cone
- Large DESU: ADR 4, incendiary damage up to 200 meters distance, 75 degree cone

Antimatter Charge

A magnetic bottle container can be placed over the primary charge of the DESU. This container utilizes magnetic forces to hold a quantity of antimatter in suspension. When the DESU detonates, it first causes the antimatter container to be propelled away from the DESU, after it is propelled away from the DESU it then rapidly loses containment of the antimatter charge, thus producing an initial interaction which produces an initial explosion which forces the rest of the antimatter material to scatter in a spherical pattern. In space, the result would produce rapidly decaying antimatter 'blobs' which would spread outward for thirty meters before effectively decaying. In atmosphere, the result would produce a tactical nuclear explosion. This charge option is only available to the large grade DESU.

Damage Rating & Range

Tier 8 or Tier 9, Medium Anti-Mecha or Heavy Anti-Mecha ( **Fix Me!**): Staff needs to determine which) / Tier 9, Heavy Anti-Mecha, thirty meters in space, 20 MT explosion in atmosphere or nebula.

Extra Shrapnel Charge

A charge can be placed over the primary charge which can contain large quantities of shrapnel producing material. This additional charge would effectively increase the area which can be effectively damaged by the DESU when dealing with personnel. However, due to the increased mass, velocity is lost thus removing penetration.

Damage Ratings & Range

- Small DESU: Tier 2, Medium Anti-Personnel, Up to 75 meters distance, 60 degree cone.
- Medium DESU: Tier 3, Heavy Anti-Personnel, Up to 100 meters distance, 70 degree cone.
- Large DESU: Tier 4, Light Anti-Armor, Up to 125 meters distance, 80 degree cone.

Gravitational Charge

The DESU can have it's primary charge removed all together and replaced with a gravitational charge device. This device utilizes high power capacitors to gather energy from the DESU's QNC. When triggered, it activates a high power gravitational field generator. The established gravitational field is designed to produce gravitational effects ten thousand times stronger than that of standard gravity. Unfortunately, damage can not be effectively determined due to the variable nature of armor materials, gravitational manipulation technology, and defensive technology. However, the damage effect can simply be described as 'Crushing'.

Munition Alternatives

The UMC has designed alternative charges for the DESU which incorporate the explosive device technologies developed by the Lorath Matriarchy. DESU devices can use the technology incorporated into [Lorath Missiles and Torpedoes](#). Small DESU can utilize Mi-Size munition charges, Medium DESU can utilize S-Size munition charges, and large DESU can utilize M-Size munition charges.

User Information

Deployment

Placement

The DESU is capable of being deployed on objects, beneath cover, and if the gravitational system is used the DESU can be deployed in mid-air or space. To place the DESU on an object using the electromagnetic driven spike, place the DESU's mounting side against the intended object, then pull the yellow-tagged tab located on the interface panel side of the DESU. To suspend the DESU in a gravitational field, pull the purple-tagged tab.

The DESU should be deployed with the explosive charge side of the unit facing the intended kill-zone. It is highly suggested that operators of the DESU deploy the DESU in a manner which would allow for access to the DESU's key interface in the event of a need to disarm the DESU.

Trip Wire Set-up

In trip-wire applications, the user must utilize a physical cord which can be attached to a detonator pin which can be inserted into the DESU's physical trigger interface port located on the opposite side of the DESU relative to the interface panel side of the DESU. The pin also can be attached to a pair of lead-wires. A positive and negative pair of wires can then be ran between a detonator system and the DESU. If the circuit is closed and the positive and negative wires are crossed, the DESU will detonate.

Activation & Interface

Physical Interaction

To activate the DESU, an issued pico-jelly key must be used for physical activation and deployment. Pico-jelly keys are included in shipping containers for the DESU, and are often kept in storage along with the DESU.

Located near the key insertion slot are indicators which detail which modes are available. An arrow indicator is placed on the key receptacle which points to the indicated setting when the key is turned. The user must place the arrow to point to the intended activation mode.

In timed applications, a thumb-wheel dial located beside the key-interface can be used to set the time which would be counted until the DESU is detonated. A three second lack of input into the timer system after initial input causes the timer interface to be placed in a 'locked' state, thus preventing tampering with the time allotted. The configured time is indicated on a non-lit LCD display which can display up to 24 hours of time.

Remote Interaction

When remotely utilizing the DESU utilize the specified receiver frequency which is included with the individual DESU in the DESU deployment pamphlet. To interface remotely, transmit IFF data to the designated receiver frequency, followed by the identification code which is to be set. Once the identification code is set, it must be utilized in combination with the IFF data to permit remote interface. If improper data is received by the DESU and three unsuccessful interface attempts are made, the DESU will be set to an automated detonation mode which would require a disarming code which can only be gained by contacting the United Manufacturing Cooperative to request the manufacturer's disarming code for that specific DESU.

Remotely, the DESU can be set to any one of the possible detonation modes, or can be remotely detonated at a user's discretion.

Working With The Explosive Charge

Removing The Default Charge

The standard charge in the DESU is a stable chemical charge which can be accessed by removing the exterior soft-metal charge shaping plate. The charge itself can be removed by releasing the chemical adhesives which hold the charge in place. Note, the DESU must be in an inactive stand-by state while working while disengaging the chemical charge from the DESU housing or the chemical charge will detonate. Once the default charge is removed, an alternative charge can be placed in its place.

Attaching An Alternative Charge

Added Charge

Alternative charges can be fixed onto the primary charge by removing the soft-metal exterior plate, then fixing the added charge onto the primary charge. UMC manufactured added charges will 'snap' into place when inserted. Alternatively, non-standard components can be interfaced with the DESU by connecting the non-standard explosive to a set of charge-pins which are located adjacent to the primary charge. These pins are not live until the DESU is detonated, thus it is safe to attach lead-wires from the DESU to the non-standard added charge.

Replacement Charge

First, follow charge removal procedures indicated under the 'Removing Default Charge' section. Once the charge is removed, a UMC produced charge can be snapped into it's place. Once placed, the charge is effectively installed and ready for deployment. Alternatively, a non-standard charge can be fixed in place of the primary charge by first removing the primary charge, then installing the proper lead-wires from the DESU to the alternative charge's detonator.

Detonation Information

When in automatic mode, the detonation of the DESU has no obvious sign of activation other than the detonation itself. No operation mode of the DESU creates audible signs of the DESU's presence other than potential vibrations produced by interaction with a trip-wire when the DESU is deployed in a trip configuration. It is advised that users exercise extreme caution while operating the DESU due to there being no time differential between the time when DESU is triggered and when the DESU activates its detonation procedure. Either the DESU will explode when triggered, or the timed activation will take place. When the timed activation reaches it's end, the DESU will detonate with no additional delay.

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Night to day, cloud cover, lightning storm, sun-spots, etc

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