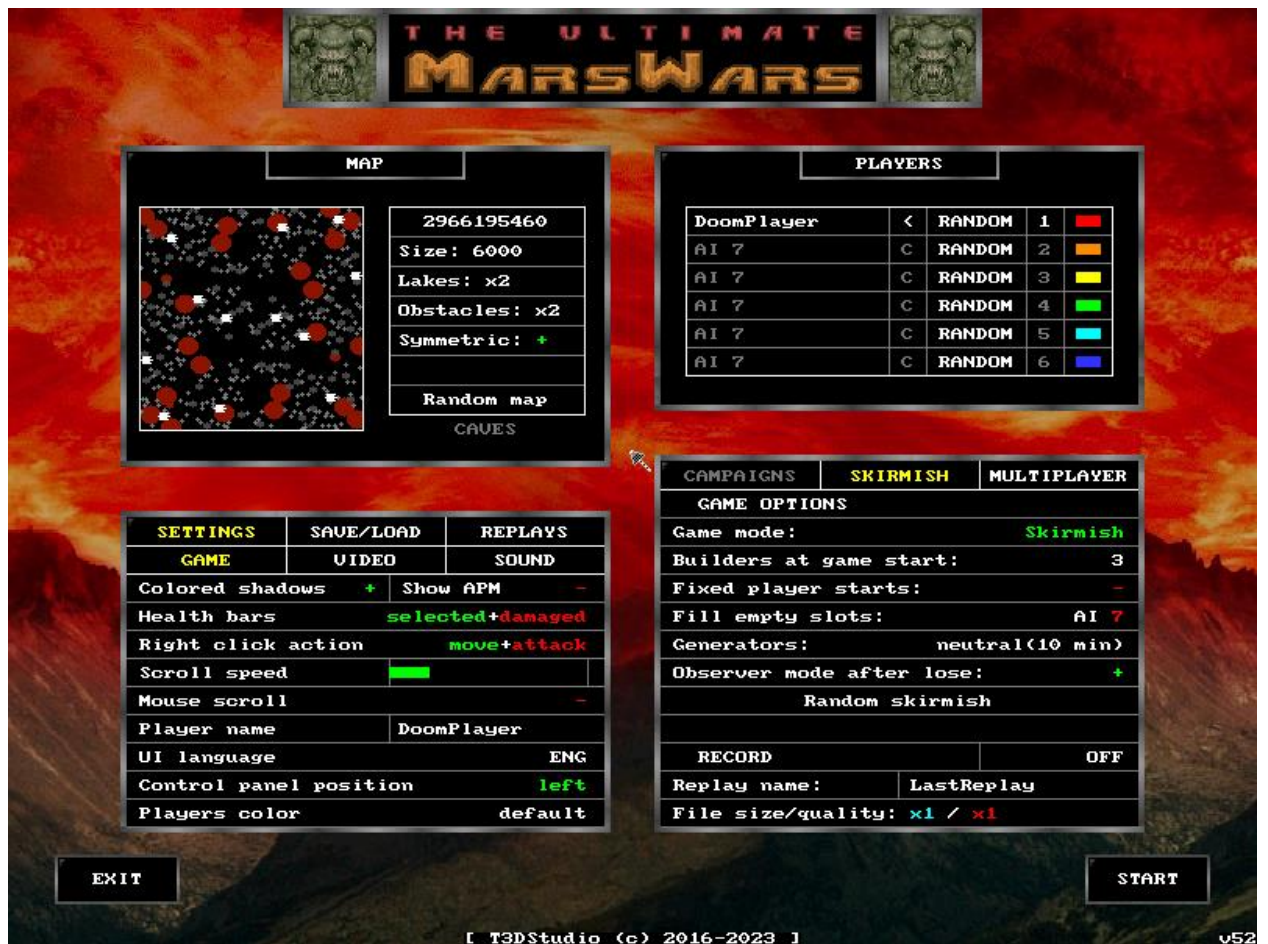# The Ultimate

MarsWars

The Ultimate MarsWars – is a real-time strategy game set in the Doom 2 universe.
Current version – **52**.

Abbreviations used:
MLBC - left mouse click.
MRBC - right mouse click.
MMBC - middle mouse button click.
HPS – hits per second.
SDR – splash damage range.

Main menu

Menu controls:
- For most menu items, use MLBC or MRBC to change their value.
- Some items need to be selected before editing. Use MLBC to select them and the keyboard to change the value.

Section MAP

Map settings:
  Random seed [*0-4294967295*] – determines the positions of obstacles and player starts.
  Size [*2000-8000*] – map size.
  Lakes – lake's obstacles part.
  Obstacles – obstacles count multiplier.
  Symmetric – symmetry option.
  Random map – set random map settings.
The type of liquid in lakes (such as water, slime, blood, mud, lava, and others) and the texture of the land depend on the number. Liquids do not damage units.

Section PLAYERS

Players table.

Player name	Status	Side	Team	Color
DoomPlayer	<	RANDOM	1	🟥
AI 7	C	RANDOM	2	🟧
AI 7	C	RANDOM	3	🟨
AI 7	C	RANDOM	4	🟩
AI 7	C	RANDOM	5	🟦
AI 7	C	RANDOM	6	🟦

Field description and controls:
Player name:
    - If *Status* = «**C**» (computer player), use MLBC here to switch AI level;
    - If *Status* = «**C**» (computer player) or « » (empty slot), use MRBC here to move yourself to that position.
Status:
    « » (no symbol) – empty slot;
    «**C**» – computer player.
    For multiplayer games:
        «+» or «-» – Player «ready»/«not ready» status;
        «**?**» – Connection problem;
        «**@**» – Host player (server);
        «**<**» – You position.
    Use MLBC here to add/remove AI players.
Side – Hell or UAC. If *Team* = «-» this field will contain «OBSERV.» value.
Team – team number [-,1-6]; players with the same team number are allies; values «-» mean this player is an *observer*.
Color – player color; color cannot be changed.

During a multiplayer game, only the host player (server) can change the status, team, or AI level of the computer players on that table.

Subsection «GAME»:
  COLORED SHADOWS – change the color of the unit shadows to the color of the player;
  SHOW APM – APM information;
  HEALTH BARS - option to draw the unit's health bars;
  RIGHT CLICK – right-click order type;
  SCROLL SPEED – the speed at which the camera moves;
  MOUSE SCROLL – toggle on/off the ability to move the camera with the mouse at the edge of the screen;
  PLAYER NAME – your name in the game; cannot be changed when starting the game or creating a multiplayer game;
  UI LANGUAGE – English or Russian;
  CONTROL PANEL POSITION - up/down/left/right edge of screen;
  PLAYERS COLOR – the color scheme of the players.
Subsection «VIDEO»:
  WINDOW RESOLUTION;
  WINDOWED – full screen or windowed;
  SHOW FPS – FPS information.
Subsection «SOUND» - music and game sounds volume.

Section SAVE/LOAD

Save and load game. You cannot save/load a game in multiplayer mode.

Section REPLAYS

Game replays.

Section CAMPAINGS

Campaign missions. Unavailable yet.

Section SCIRMISH

Subsections *GAME OPTIONS* and *RECORD*. You can toggle game recording on and off at any time. See **Game mechanics -> Game options** manual section to learn more about *GAME OPTIONS*.

Section MULTIPLAYER

Server/client settings and game chat.

Dedicated server

Dedicated server - a special version of the game that does not load any game resources and immediately starts working as a server. To start a *dedicated server*, run it with the following parameters:

MarsWars_ded.exe [X]

where X - UDP port (optional argument, default value - 10666).
After connecting to a dedicated server, you can use text commands in the game chat to manage game settings. Use the -h or -help command to display all available chat commands. The game will start automatically when all players are ready (Field Ready = "+"). After 10 seconds of the last player disconnecting, the server will reset the game.

Game mechanics

Game control panel

Game minimap:

Minimap indicator types:
- Green pulse circle – unit ready;
- Green pulse square – construction complete;
- Yellow pulse square - upgrade complete;
- Aqua pulse circle - unit promoted;
- Red pulse circle – unit is under attack;
- Red pulse square – base is under attack.

Tabs:
- *Buildings* – available buildings;
- *Units* – available units;
- *Upgrades/researches* – available upgrades/researches;
- *Controls* – basic unit orders and game controls.

Numbers on icons:
Green – total number of selected units/buildings;
Yellow – number of productions;
Orange or gray - total number of that type of building/unit or research level;
Purple - number of units of that type in selected transport(s);
White - time left to finish production;
Aqua – ability recharge time;

Unit selection, orders and hotkeys

Use the left mouse button to select the unit and the right mouse button - to command it. You can add units to the selection using the «**Shift**» key. Use double left click on a unit or single click with «**Ctrl**» key to select all of its kind on the screen. To bind units to a hotkey group - select them and press «**Ctrl**»+«**1..9**». To add units to a group - select them and press «**Alt**»+«**1..9**». Use the double group hotkey to move the camera to the nearest units in this group. «**F2**» hotkey will select all combat units on the map. Double «**F2**» hotkey will move camera to nearest combat unit. For buildings that can produce units, you can set the rally point by right-clicking the mouse.
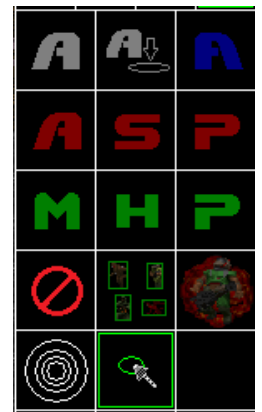
Basic orders

- Mouse right click – «Move» or «Move»+«Attack» depending on your choice in the settings;
- «Special ability» (**Q**) – perform special ability (if unit has it, see unit's hint).
- «Special ability at point» (**W**) – performs special ability at specified point (if unit has it, see unit's hint). e
- «Rebuild/Advance» (**E**) – start rebuild/advance (if unit has this mechanic, see unit hint).
- «Move» (**A**), «Stay» (**S**), «Patrol» (**D**), attack enemies;
- «Move» (**Z**), «Stay» (**X**), «Patrol» (**C**), ignore enemies;
- «Cancel production» (**Ctrl+C**) – cancel current production;
- «Select all battle units» (**F2**);
- «Destroy» (**Delete**) – destroy selected units;
- «Alarm mark» (**F5**) – set a mark for allies;
- «Right-click action» (**Ctrl+Space**) – toggle right-click order.

Other game controls

«**TAB**» – switching the tab of the game control panel;

Tab «*Buildings*»: **R T Y F G H V B N U I O J K L** – buildings;

Tab «*Units*»: **R T Y F G H V B N U I O J K L** and **Ctrl + R T Y F G H V B N** – units;

Tab «*Upgrades/researches*»:

   R T Y F G H V B N U I O J K L and **Ctrl + R T Y F G H V B N** – upgrades;

-«**Alt**» - draw colored rectangles and health bars over units;

- «**Pause/Break**» **–** pause/resume game (only network game).

- «**PrtScr**» - make screenshot.

- «**Enter** » - game chat;

- «**Shift**+**Enter**» - chat with all players;

- «**Ctrl**+**Enter**» - chat with allies.

Replay controls

- «Faster game speed» (**Q**) – toggle on or off fast game speed;
- «Skip backward»:
    - **MLBC** or **W** - rewind 2 seconds;
    - **MRBC** or **Ctrl+W** - rewind 10 seconds;
    - **MMBC** or **Alt+W** - rewind 1 minute;
- «Skip forward»:
    - **MLBC** or **E** - fast-forward 2 seconds;
    - **MRBC** or **Ctrl+E** - fast-forward 10 seconds;
    - **MMBC** or **Alt+E** - fast-forward 1 minute;
- «Pause» (**A**) – toggle playback pause;
- «Player-recorder POV» (**S**) - camera of the player who recorded the replay;
- «List of game messages» (**D**) – show/hide chat history;
- «Fog of war» (**Z**) – toggle fog of war;
- «All players» (**0**) – all players vision;
- «Player [1-6]» (**1-6**) –vision of player #1-6.
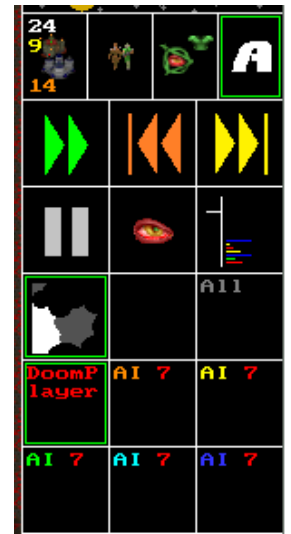
Observer mode controls

- «Fog of war» (**Q**) – toggle fog of war;
- «All players» (**0**) – all players vision;
- «Player [1-6]» (**1-6**) –vision of player #1-6.

Other UI

1) Time – the game time;
2) Game mode specific information;
3) *Energy* section – free energy level / maximum energy level;
4) *Army* section – limit of **all units** (units + buildings); put cursor here to see limits for each category;
5) FPS/APM info;
6) Unit groups info.

Hint format

(full format)
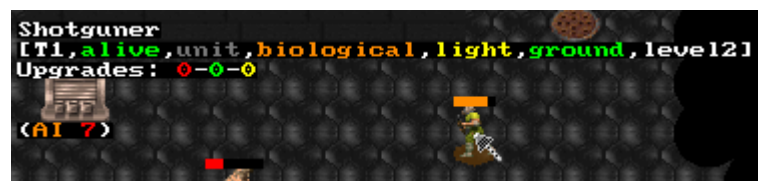
(short format)

*Name (HOTKEY, energy, limit use/upgrade max level, PRODUCTION TIME, *)*
[Unit categories and attributes]
Upgrades A-B-C A – sum of attack upgrades; B – sum of armor upgrades; C – sum of other upgrades.
Description
Requirements: *(if defined)*
Produced by: *(for units/buildings only)* which buildings can produce this unit/building;
* - *(only for upgrades)* means that it is possible to produce this upgrade in many buildings at the same time.
(PLAYER-OWNER)

Camera movement

Possible ways to move the game camera:
- keyboard arrow keys;
- middle mouse button;
- by moving the cursor to the edges of the screen; this method can be toggled on or off in the game settings.
The speed of the camera movement can be changed in the game settings.

Base construction

You must have at least one builder to build a base. Switch the control panel to «*Buildings*» tab and click on the building icon to select the type of building you need. If the requirements for the selected building type are not met, the game will display an error message; otherwise, the game will draw the building's sprite and a circle around the mouse cursor. The radius of the circle is the radius of the building. If the circle is **red** - the building needs more space, if it is **blue** - the build place is too far away from the nearest builder, if it is **green** - the building can be built here.

Unit construction

Any unit can be produced if the player has at least one building that can produce that type of unit, and the unit's other requirements have been fulfilled. Switch the control panel to «*Units*» tab and click on the unit icon. If the requirements for the selected unit type are not met, the game will display an error message. If no unit production building is selected - the game sends the production order to any unused production building, otherwise it sends the order to selected production buildings. It is impossible to create a unit production queue.

Upgrades production

Go to the «*Upgrades/Research*» tab in the Control Panel and click the upgrade icon. If the requirements for the selected upgrade type are not met, the game will display an error message. If no upgrade production facility is selected - the game sends the production order to any unused production facility, otherwise it sends the order to selected production facilities. It is impossible to create an upgrade production queue.

Resources

There is no gold/wood/minerals/etc. like in other RTS games. There is an energy level, which means how many productions (buildings/units/upgrades) you can have at the same time.

Army limit

Maximum unit limit (all units + all buildings!) for each player - **125**.

Game options

Game mode:

    Skirmish - default mode. *Victory conditions* is to destroy all opposing players.

    3x3 – red+orange+yellow vs green+aqua+blue players. *Victory conditions* are the same as in **Skirmish** game mode.

    2x2x2 – red+orange vs yellow+green vs aqua+blue players. *Victory conditions* are the same as in **Skirmish** game mode.

    Capturing points - there are 4 points on the map that need to be captured. *Victory conditions* is to capture all of these points.

    Invasion – all players are united in a one team against powerful monsters. *Victory conditions* is to survive 20 waves.

    King of the Hill – like **Capturing points** mode, but there is only one point to capture in the center of the map. *Victory conditions* is to capture and hold the central map area for 1 minute.

    Royal Battle – there is a circle of death that begins to collapse from the map's borders to its center. All units outside the circle die. *Victory conditions* is to be the last one alive.

Builders at game start: specify how many builders players will have at the start of the game.

Fixed player starts: if set («+») the game will show you player start positions on the map.

Fill empty slots: if set («+»), empty player slots will be filled with AI players;

Generators: the «own» value means that players can build their own generators and builders. Other values mean

- Players cannot build their own generators and builders;

- the game spawns neutral generators, which can be captured by players;

- the captured generator increases the energy level of all players of the team owning the generator;

- neutral generators can have a configured lifetime.

Random skirmish: create a random map and random game settings.

Units and buildings

Basics

Unit categories and attributes

`[T1,alive,building,mechanical,heavy,ground]`
`[T1,unit,biological,heavy,ground]`
`[T1,unit,mechanical,heavy,flying,transport]`
`[T2,unit,mechanical,heavy,ground]`
`[T1,building,mechanical,light,ground,detector]`
`[T3,unit,biological,heavy,ground]`
`[T1,alive,unit,biological,light,flying,level2]`
`[T1,alive,unit,mechanical,light,floater,invulnerable]`

Categories – each unit must be in all of the following categories:
- T1/T2/T3 – formal technical level of the unit;
- alive or dead;
- building or unit;
- mechanical or biological;
- light or heavy
- fly, floater or ground; floater is a ground unit that can move over map obstacles;

Attributes – units can have some of these attributes:
- transport – unit is transport;
- level X – current level of the unit, where X is level [2-4]. Level 1 units do not have this attribute;
- detector – unit can detect invisible units;
- invulnerable – unit is invulnerable;
- stuned – unit is temporary stunned.

Some attributes are not shown in the hint. Some others give additional visual effect to the unit:

«Hell Vision» ability effect:

invulnerable effect:

level 2-3-4 units have these marks:

detector attribute give to unit this mark:

advanced buildings have this marker:

UAC Radar «Scan» ability effect:
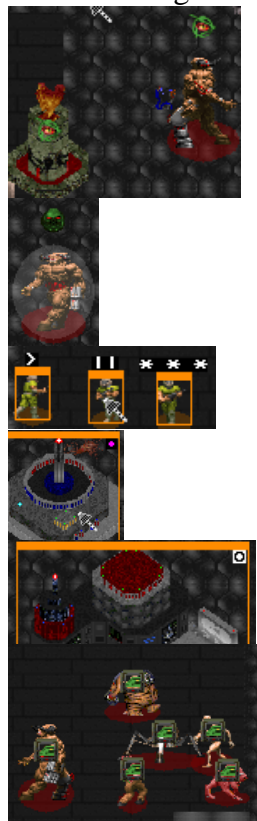
Some basic mechanics

Unfinished buildings have no armor and take 100% damage. If the **maximum** energy level drops to 0 - all your buildings will explode. In non-campaign games. If the **free** energy level drops to 0 or less - all your production will stop. If a player loses all his builders - all his units revealed on the map.

Pain State

Some units have «Pain State» - it is a 1-second stun state after a certain number of damage hits. «Pain State» is accompanied by a special sound and unit animation.

Veteran system

All combat units gain combat experience and increase their level. All units spawn at level 1 and can be upgraded to level 4. With each new level, the unit increases its damage, armor, and pain threshold. The damage and armor bonus from each new level is 2 * unit-limit-consumption. The pain threshold bonus is an additional 2 hits that the unit can take before «Pain State» occurs. To take level 2, the unit must be in combat for 30 seconds, to take level 3 - 1 minute, and to take level 4 - 1.5 minutes.
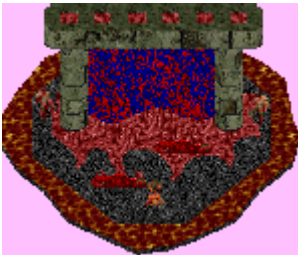
Damage and armor mechanics

When a unit attacks another, next sequence is performed:
1) The game takes the basic damage of the attacking unit and adds to it the bonus of its level and the attack upgrades.
2) Damage modifiers applied to the resulting damage.
3) The game calculates the armor of the attacked unit and subtracts it from the damage of the attacking unit. The resulting damage cannot be less than 1.
4) The attacked unit take resulting damage.

BUILDINGS
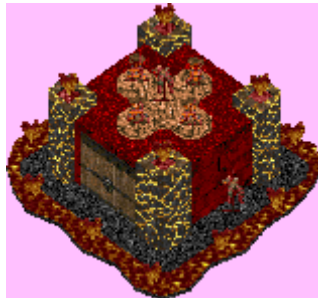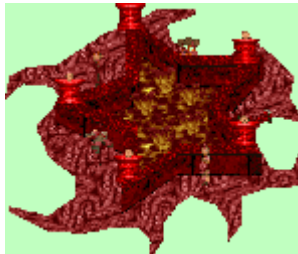
HELL

Sprite	Description
Sprite	**Description** *Name (*HOTKEY*,*energy*,*limit use*,*PRODUCTION TIME*)* *[Unit categories and attributes]* *Description* Requirements: *(if defined)* Produced by: which buildings can produce this unit/building;
	Hell Keep (R,900,1,56) **[T1,building,mechanical,heavy,ground]** **Hits: 15000.** **Size 66** **Builder.** **Increase energy level: 300.** **Can be rebuilt into: "Great Hell Keep".** **Special ability: "Blink"{Required: "Hell Keep Blink Charge"}.** **Constructed by: Hell Keep, Great Hell Keep**
	Hell Keep <table><tr><td>**Hits**</td><td>15000</td></tr><tr><td>**Size**</td><td>66</td></tr><tr><td>**Building time**</td><td>56</td></tr><tr><td>**Base sight radius**</td><td>280</td></tr><tr><td>**Energy required**</td><td>900</td></tr><tr><td>**Energy provided**</td><td>300</td></tr></table> Main building. Allows you to build a base.
	Great Hell Keep
	Hell Gate <table><tr><td>**Hits**</td><td>1500</td></tr><tr><td>**Size**</td><td>60</td></tr><tr><td>**Building time**</td><td>41</td></tr><tr><td>**Sight radius**</td><td>200</td></tr><tr><td>**Max count**</td><td>Unlimited</td></tr><tr><td>**Energy required**</td><td>4</td></tr></table> Produce units.

	Hell Symbol	
	Hits	200
	Size	24
	Building time	10
	Sight radius	200
	Max count	Unlimited
	Energy required	1
	Energy provided	1

Provide energy.

Possible upgrades:
- **Short distance teleportation**;

Hell Pool

	F
Hits	1000
Size	53
Building time	41
Sight radius	200
Max count	Unlimited
Energy required	6

Research upgrades.

Hell Tower

	G
Hits	700
Size	21
Building time	20
Base sight/attack radius	250
Max count	Unlimited
Energy required	2

Defense structure. Attacking all units with **Revenant** fireballs, but **Revenants** - with **Cacodemon** fireballs.

Possible upgrades:
- **Range attack upgrade**;
- **Attack/sight radius upgrade**;
- **Short distance teleportation**.

Hell Teleport

	H
Hits	500
Size	28
Building time	31
Sight radius	200
Max count	1
Energy required	4

Teleport units to any point: select **Hell Teleport** and do right

| | | click to set destination point; select units and do right click on **Hell Teleport** or it icon. Reload time after teleportation depend from unit power. Can teleport allies units.

Possible upgrades:
- **Teleport upgrade** – decrease reload time;
- **Reverse teleport** - units can teleport back to **Hell Teleport**. |

	V	**Hell Monastery** **Hits** 1000 **Size** 65 **Building time** 100 **Sight radius** 200 **Max count** Unlimited **Energy required** 10 **Requirements** *Hell Pool* building Can advance units. **Possible upgrades:** - **Hell Power** – charges for units advancing; There is 2 methods to make advance any unit: 1) Select **Hell Monastery** and do right click on unit; 2) Select unit and do right click to **Hell Monastery** building or it icon on control panel;
	B	**Hell Totem** **Hits** 600 **Size** 21 **Building time** 25 **Base sight/attack radius** 250 **Max count** Unlimited **Energy required** 3 **Requirements** *Hell Monastery* building *Ancient Evil* upgrade Advanced defense structure. Attacking like **ArchVile** unit. **Possible upgrades:** - **Range attack upgrade**; - **Attack/sight radius upgrade**; - **Short distance teleportation**; - **Invisibility**.
	N	**Hell Altar** **Hits** 750 **Size** 50 **Building time** 31 **Sight radius** 200 **Max count** 1 **Energy required** 4 **Requirements** *Hell Monastery* building *Ancient Evil* upgrade Cast **Invulnerability** on units. **Possible upgrades:** - **Invulnerability**- charges for ability.
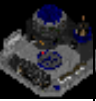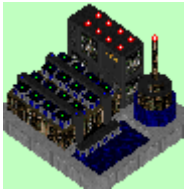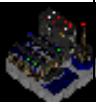
SPECIAL BUILDINGS

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Hell Eye

Base sight radius	250
Max count	Unlimited
Requirements	*Lost Soul* unit *Hell Eye* upgrade

Detector. Summoned by a **Lost Soul**. Live time - 2 minutes. Dies after single hit.

Possible upgrades:
- **Hell Eye** – increase sight radius;
- **Invisibility**;

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Hell Military Unit

Hits	1500
Size	70
Sight radius	200
Max count	Unlimited
Requirements	advanced *Lost Soul* unit *UAC Military Unit* building

Produce **zombies** and **Hell** units.

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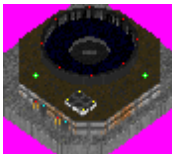
Possible upgrades for all Hell buildings:
- **Buildings armor upgrade**;
- **Building restoration** – restoration for damaged buildings.

UAC

Sprite	Icon / Hot key	Description
	R	**UAC Command Center** **Hits** 4000 **Size** 66 **Building time** 80 **Base sight radius** 280 **Max count** Unlimited **Energy required** 8 **Energy provided** 6 Main building. Allows you to build base. **Possible upgrades:** - **Command Center flight** - **Command Center** gains ability to fly (use «Action» order to fly up or land **CC**); - **Sight radius upgrade**; this upgrade have effect on **CC** only when it on ground; - **Command Center Turret** – **CC** can attack when it flying (attacking like **Major**, 2 HPS, 250 range, only _ground_ units); - **Free placement** – **CC** can land to obstacles.
	T	**UAC Military Unit** **Hits** 1700 **Size** 66 **Building time** 40 **Sight radius** 200 **Max count** Unlimited **Energy required** 4 Produce units.
	Y	**UAC Generator** **Hits** 400 **Size** 42 **Building time** 20 **Sight radius** 200 **Max count** Unlimited **Energy required** 2 **Energy provided** 2 Provide energy.

	F	**UAC Weapon Factory** **Hits** 1700 **Size** 62 **Building time** 40 **Sight radius** 200 **Max count** Unlimited **Energy required** 6 Research upgrades.
	G	**UAC Chaingun Turret** **Hits** 400 **Size** 17 **Building time** 15 **Base sight/attack radius** 250 **Max count** Unlimited **Energy required** 2 **Attack** 12 / 4 HPS Defense structure. Attacking like **Mastermind** unit. **Possible upgrades:** - **Range attack upgrade**; - **Attack/sight radius upgrade**; - **Turrets armor**;
	H	**UAC Radar** **Hits** 500 **Size** 35 **Building time** 31 **Base sight radius** 200 **Max count** 1 **Energy required** 2 Reveals map. To reveal any map area – select **Radar** and do right click on this area. **Possible upgrades:** - **Detectors**; - **Radar upgrade** - Increase radar scouting time and radius.

	V	**UAC Tech Center** **Hits** 1700 **Size** 62 **Building time** 94 **Sight radius** 200 **Max count** 1 **Energy required** 10 **Requirements** *UAC Weapon Factory* building Can advance units. **Possible upgrades:** **- Advanced armory** - **Tech Center** will be able to upgrade units; **- Fast rearmament** - decrease **Tech Center** upgrade reloads time. To advance unit, select unit and do right click on **Tech Center** or it icon on control panel.
	B	**UAC Plasma Turret** **Hits** 400 **Size** 17 **Building time** 20 **Base sight/attack radius** 250 **Max count** Unlimited **Energy required** 2 **Requirements** *UAC Tech Center* building Defense structure. Attacking like **Major** unit. **Possible upgrades:** **- Range attack upgrade**; - **Attack/sight radius upgrade**; - **Turrets armor**;
	N	**UAC Rocket Launcher Station** **Hits** 500 **Size** 40 **Building time** 31 **Sight radius** 200 **Max count** 1 **Energy required** 4 **Requirements** *UAC Tech Center* building Provide a missile strike. Missile strike requires "**Missile strike**" research. Missile have 300 damage and 150 **SDR**. Deal x0,05 damage to *light* units, x2 to *buildings* and x0,75 to *air*.

		UAC Rocket Turret	
	Ctrl **+** **T**	**Hits**	500
		Size	17
		Building time	31
		Base sight/attack radius	250 common 190 against *air*
		Max count	Unlimited
		Energy required	4
		Requirements	*UAC Tech Center* building *Rocket turrets* upgrade
		Defense structure. Attacking like **Cyberdemon** unit with 0,6 HPS. **Possible upgrades:** - **Range attack upgrade**; - **Attack/sight radius upgrade**; - **Turrets armor**;	

SPECIAL BUILDINGS

		Mine	
	---	**Hits**	1
		Size	5
		Base sight radius	100
		Max count	Unlimited
		Requirements	advanced *Engineer* unit
		Set by advanced **UAC Engineers**. **Possible upgrades:** - **Detectors**; - **Mine-sensor** – mine can switch to sensor mode that provide 300 sight ranges and not explode under enemy unit (use «Action» order to switch mode).	

Possible upgrades for all UAC buildings:
- **Buildings armor upgrade**.

UAC can't build **UAC Rocket Launcher** and **UAC Rocket Turret** in **UDOOM** mode.

UNITS

HELL UNITS

All **Hell** units have «*pain state*» - state when it stun and cannot attack and move. «*Pain state*» happens every X hit from most attacks or more often from other.

Sprite	Icon / hot key	Description
	R	**Lost Soul** **Class** — *soaring, light* **Hits** — 90 **Production time** — 8 **Energy required** — 1 **Speed** — 23 **Size** — 10 **Sight/attack radius** — 250 **Pain state** — every 3 hit **Attack** — 10 / 1 HPS Fast air melee unit. Deal x0,5 damage to <u>ground</u> units and x0,25 to <u>mechanical</u> units. Advanced **Lost Soul** can capture **UAC infantry**/**UAC Military Unit** and transform it to **zombies**/**Hell Military Unit** (**UAC Military Unit** must have < 2/3 hits). **Possible upgrades:** - **Melee attack upgrade**; - **Hell Eye** – **Lost Soul** can transform to **Hell Eye** (use «Action» order);
	T	**Imp** **Class** — *ground, light* **Hits** — 70 **Production time** — 5 **Energy required** — 1 **Speed** — 9 **Size** — 12 **Sight/attack radius** — 250 **Pain state** — every 3 hit **Attack** — 12 / 1 HPS Weak ground unit with ranged attack. Deal x0,5 damage to <u>air</u> and <u>mechanical</u> units. Attacking other **Imps** only with melee attack (damage same as ranged attack). Advanced **Imp** has 2 HPS. **Possible upgrades:** - **Firepower** – increase missiles speed.

		Demon	
	Y	**Class**	*ground, medium*
		Hits	150
		Production time	8
		Energy required	2
		Speed	15
		Size	14
		Sight/attack radius	200
		Pain state	every 8 hit
		Attack	40 1 HPS
		Base armor	2
		Fast ground unit with melee attack. Cannot attack *air* units (except Lost Soul). Advanced **Demon** has invisibility. **Possible upgrades:** - **Demon's anger** – increase Demon's movement speed and attack.	

		Cacodemon	
	F	**Class**	*air, medium*
		Hits	225
		Production time	20
		Energy required	2
		Speed	9
		Size	14
		Base sight/attack radius	250
		Pain state	every 6 hit
		Attack	25 0,8 HPS
		Base armor	2
		Air unit with ranged attack. Deal x1,25 damage to *light* units, 0,75 to *air* and *massive* units, x0,5 to *mechanical* units. Attacking other **Cacodemons** only with melee attack (damage same as ranged attack). Advanced **Cacodemon** has 275 attack and sight ranges. **Possible upgrades:** - **Firepower** – increase missiles speed.	

		Baron of Hell / Hell Knight	
	G	**Class**	*ground, medium*
		Hits	350
		Production time	40
		Energy required	4
		Speed	9
		Size	14
		Sight/attack radius	250 common 190 against *air*
		Pain state	every 8 hit
		Attack	50 0,8 HPS
		Base armor	3
		Heavy ground unit with ranged attack. Attacking other **Barons/Knights** only with melee attack (damage same as ranged attack). Deal x0,5	

damage to *light* units, x0,75 to *air* and *mechanical* units. **Baron Of Hell** (red skin) – it advanced **Hell Knight** (white skin). **Baron Of Hell** take x0,5 damage. In **UDOOM** mode this unit spawns as **Baron Of Hell**.

Possible upgrades:
- **Firepower** – increase missiles speed.

	H	**Cyberdemon**	
		Class	*ground, massive*
		Hits	2000
		Production time	90
		Energy required	8
		Speed	10
		Size	20
		Base sight/attack radius	250 common 190 against *air*
		Pain state	every 15 hit
		Attack	100 0,85 HPS 45 SDR
		Base armor	3
		Max count	1
		Requirements	***Hell Monastery*** building

Heavy ground unit with ranged attack. Deal x1,5 damage to *buildings* and x0,5 to *light* units. You can't product **Cyberdemon** when **Mastermind** production in progress. Don't take splash-damage from rockets and grenades. Advanced **Cyberdemon** has 275 attack (against *ground*) and sight ranges.

	V	**Spider Mastermind**	
		Class	*ground, massive*
		Hits	2000
		Production time	90
		Energy required	8
		Speed	10
		Size	35
		Base sight/attack radius	275 common 205 against *air*
		Pain state	every 15 hit
		Attack	12 9 HPS
		Base armor	3
		Max count	1
		Requirements	***Hell Monastery*** building

Heavy ground unit with ranged attack. Deal x0,5 damage to *buildings*, x0,75 to *mechs* and x1,5 to *light* units. You can't product **Mastermind** when **Cyberdemon** production in progress. Don't take splash-damage from rockets and grenades. Advanced **Mastermind** has 325 attack (against *ground*) and sight ranges.

		Pain Elemental	
	B	**Class**	*air, medium*
		Hits	200
		Production time	40
		Energy required	6
		Speed	9
		Size	14
		Sight radius	250
		Attack radius	350
		Pain state	every 3 hit
		Attack	spawn **Lost Soul** 0.6 HPS
		Requirements	*Hell Monastery* building
		Flying unit. Spawn **Lost Soul** on attack or on «Action» order. Advanced **Pain Elemental** spawn advanced **Lost Souls** and spawn 3 **Lost Souls** after death.	

		Revenant	
	N	**Class**	*ground, light*
		Hits	200
		Production time	40
		Energy required	4
		Speed	12
		Size	13
		Base sight/attack radius	250
		Pain state	every 7 hit
		Attack	30 0.8 HPS
		Requirements	*Hell Monastery* building
		Ground unit with ranged attack. Deal x1,5 damage to _mechs_ and x0,75 to _air_ and _buildings_. Attacking other **Revenants** only with melee attack (damage same as ranged attack). Advanced **Revenant** has 325 attack ranges. **Possible upgrades:** - **Revenant missile upgrade** - missiles become homing.	

		Mancubus	
	Ctrl + R	**Class**	*ground, massive*
		Hits	400
		Production time	60
		Energy required	6
		Speed	6
		Size	20
		Sight radius	250
		Attack radius	300 common 150 against _air_
		Pain state	every 4 hit
		Attack	35x2 1.2 HPS
		Base armor	3
		Requirements	*Hell Monastery* building *Ancient Evil* upgrade
		Strong ground unit with ranged attack. Deal x1,5 to _buildings_, x0,5 to _light_ units and x0,75 to _air_ and _mechs_. Cannot attack other **Mancubus**. Advanced **Mancubus** have «*pain state*» resist.	

		Arachnotron	
	Ctrl + T	**Class**	*ground, massive*
		Hits	350
		Production time	50
		Energy required	6
		Speed	9
		Size	20
		Sight/attack radius	250
		Pain state	every 4 hit
		Attack	15 4 HPS
		Base armor	4
		Requirements	*Hell Monastery* building *Ancient Evil* upgrade

Strong ground unit with ranged attack. Deal x0,5 damage to all <u>ground</u> units. Cannot attack other **Arachnotrons**. Advanced **Arachnotron** has 350 attack ranges against <u>air</u>.

		ArchVile	
	Ctrl + Y	**Class**	*ground, medium*
		Hits	400
		Production time	90
		Energy required	10
		Speed	15
		Size	15
		Sight radius	250
		Attack radius	400
		Pain state	every 12 hit
		Attack	90 0.4 HPS 15 SDR
		Base armor	3
		Requirements	*Hell Altar* building *Ancient Evil* upgrade

Strong ground unit with ranged attack. Deal x0,5 damage to <u>buildings</u>. Advanced **ArchVile** can resurrect dead units.

SPECIAL UNITS

	Ctrl + F G H V B N	Zombies	
		Class	*ground / air, light*
		Size	12
		Pain state	every 2 hit
		Requirements	*Hell Military Unit* building
	U	**UAC Infantry** that corrupted by advanced **Lost Soul**. **Zombies** don't have **UAC Infantry** abilities (**Engineer's mines**, **Medic's** paralyze bullets).	

Possible upgrades for all Hell units:
- **Ranged attack upgrade** (for units with ranged attacks);
- **Unit armor upgrade**;
- **Regeneration** – damaged units will slowly regenerate their health;
- **Pain threshold** - decrease "pain state" chance.

UAC UNITS

UAC units have no «*pain state*».

Sprite	Icon / hot key	Description
	 R	**Engineer** **Class** — *ground, light* **Hits** — 100 **Production time** — 10 **Energy required** — 1 **Speed** — 13 **Size** — 12 **Sight/attack radius** — 220 common / 165 against *air* **Attack** — 6 / 1.7 HPS **Place in transport** — 1 Weak ground unit with ranged attack. Can repair own and allies damaged *mechanical* units. Deal x1,5 damage to *light* units, x0,5 to *massive* and x0,25 to *mechanical* units. Advanced **Engineer** can paralyze *mechs* when attack it. **Possible upgrades:** - **Advanced repair and healing** - increase the efficiency of repairing; - **Mines** - **Engineer** can set **Mines** (use «Action» order).
	 T	**Medic** **Class** — *ground, light* **Hits** — 100 **Production time** — 10 **Energy required** — 1 **Speed** — 13 **Size** — 12 **Sight/attack radius** — 220 common / 165 against *air* **Attack** — 6 / 1.5 HPS **Place in transport** — 1 Weak ground unit with ranged attack. Can repair own and allies damaged *biological* units. Deal x1,5 damage to *light* units, x0,5 to *massive* and x0,25 to *mechanical* units. Advanced **Medic** can paralyze *biological* units. **Possible upgrades:** - **Advanced repair and healing** - increase the efficiency of healing.

	Y	**Sergeant**		
		Class	*ground, light*	
		Hits	100	
		Production time	10	
		Energy required	2	
		Speed	13	
		Size	12	
		Sight/attack radius	240 common 180 against *air*	
		Attack	**Not advanced**: - min: 9 - max: 28 max SDR: 30	**Advanced**: - min: 12 - max: 41 max SDR: 40
			1 HPS, min SDR: 10	
		Place in transport	1	

Ground unit with ranged attack. Deal x0,5 damage to *fly*, *light* and *massive* units, x0,25 to *mechanical* units. Damage and splash-range depends from distance to target. Advanced **Sergeant** deal more damage and have more SDR. **Sergeant's** attack set Hell units into «*pain state*» more often than other units attack.

	F	**Commando**	
		Class	*ground, light*
		Hits	100
		Production time	15
		Energy required	2
		Speed	11
		Size	12
		Sight/attack radius	250 common 220 against *air*
		Attack	6 8 HPS
		Place in transport	1

Ground unit with ranged attack. Deal x1,5 damage to *light* units, x0,5 to *massive* and x0,25 to *mechanical* units. Advanced **Commando** has invisibility.

	G	**Artillery soldier**	
		Class	*ground, light*
		Hits	100
		Production time	30
		Energy required	4
		Speed	10
		Size	12
		Base sight/attack radius	250
		Attack	50 0.6 HPS
		Place in transport	1
		Requirements	**UAC Weapon Factory** building

		Ground unit with ranged attack. Deal x1,5 damage to *buildings* and x0,5 damage to *light* and *mechs* units. Cannot attack *air* units. Cannot attack units closer than 45 pixels. Advanced **Artillery soldier** have 275 attack and sight radius.
	H	**Major** | Class	*ground/air, light*
Hits	100
Production time	20
Energy required	4
Speed	**Not advanced**: 9 / **Advanced**: 13
Size	12
Sight/attack radius	250
Attack	15 / 4 HPS
Place in transport	1
Requirements	**UAC Weapon Factory** building	 Ground/air unit with ranged attack. Deal x1,5 damage to *mechs,* x0,5 *light* and *air* units, x0,75 to *buildings*. Advanced **Major** can fly (use «Action» order).
	V	**BFG Marine** | Class	*ground, light*
Hits	100
Production time	60
Energy required	5
Speed	10
Size	12
Sight/attack radius	250 / 125
Attack	125 SDR / 0.4 HPS
Place in transport	1
Requirements	**UAC Weapon Factory** building	 Ground unit with ranged attack. Deal x0,5 damage to *light*, *mechs* units and *buildings*. Advanced **BFG Marine** has 275 attack and sight ranges.

Possible upgrades for all UAC Infantry:
- **Infantry armor upgrade**;
- **Lightweight armor** - increase infantry move speed

	B	**Air APC**

Air APC

Class	*mech, ground*
Hits	250
Production time	25
Energy required	3
Speed	22
Size	33
Sight/attack radius	250
Attack (upgrade)	6/12 2 HPS
Base transport place count	10
Base armor	3
Requirements	**UAC Weapon Factory** building

Fast air transport. Can transporting all ground UAC units. Advanced **Air APC** has 14 places.

Possible upgrades:
- **APC turret** – give to APC weapon.

Ground APC

Class	*mech, ground*
Hits	350
Production time	25
Energy required	3
Speed	15
Size	15
Sight/attack radius	250
Attack (after upgrade)	6/12 2 HPS
Base transport place count	4
Base armor	3
Places in transport	8
Requirements	**UAC Weapon Factory** building

Fast ground transport. Can transporting all ground **UAC infantry**. Advanced **Air APC** has 6 places. Marines can attack while they in APC.

Possible upgrades:
- **APC turret** – give to APC weapon.

		Terminator	
	Ctrl + R	**Class**	*mech, ground*
		Hits	350
		Production time	60
		Energy required	6
		Speed	14
		Size	16
		Sight/attack radius	275 common
		Attack	6/12 8 HPS
		Base armor	3
		Place in transport	3
		Requirements	**UAC Tech Center** building **High technologies** upgrade

Heavy ground unit with ranged attack. Attacking with chain gun (not advanced - like **Commando**/advanced like **Mastermind**).

		Tank	
	Ctrl + T	**Class**	*mech, ground*
		Hits	400
		Production time	60
		Energy required	8
		Speed	10
		Size	20
		Sight/attack radius	250
		Attack	45 SDR 0.6 HPS
		Base armor	3
		Place in transport	7
		Requirements	**UAC Tech Center** building **High technologies** upgrade

Heavy ground unit with ranged attack. Deal x1,5 damage to *buildings* and x0,5 damage to *light* units. Cannot attack *air* units. Cannot attack units closer than 45 pixels. Advanced **Tank** has 325 attack ranges.

		Flyer	
	Ctrl + Y	**Class**	*mech, air*
		Hits	350
		Production time	60
		Energy required	8
		Speed	19
		Size	18
		Sight/attack radius	275
		Attack	30 2 HPS
		Base armor	3
		Requirements	**UAC Tech Center** building **High technologies** upgrade
		Heavy ground unit with ranged attack. Deal x0,5 damage to _ground_ units and _buildings_. Advanced **Flyer** can attack in moving.	

Possible upgrades for all UAC Mechs:
- **Mech armor upgrade**;
- **Advanced engines** - increase _mechs_ move speed.

OTHER UNITS

Sprite	Description

UPGRADES

Hell

Icon	Description <name> (**hot key**, **energy required**, **time required**, **levels**, *****) ***** - means that it is possible to produce this upgrade in many buildings at the same time.
	Hell Firepower (R,600/1200/1800/2400/3000,60/105/150/195/240,x5) Increase the damage of ranged attacks for T1 units and defensive structures.
	Combat Flesh (T,600/1200/1800/2400/3000,60/105/150/195/240,x5) Increase the armor of all Hell units.
	Stone Walls (Y,600/900/1200/1500/1800,60/100/140/180/220,x5) Increase the armor of all Hell buildings.
	Claws and Teeth (F,600/900/1200/1500/1800,60/100/140/180/220,x5) Increase the damage of melee attacks.
	Flesh Regeneration (G,300/600,60/90,x2) Health regeneration for all Hell units.
	Pain Threshold (H,600/600,60/60,x2) Hell units can take more hits before being stunned by pain.
	Hell Keep Range Upgrade (V,600/600,60/75,x2) Increase Hell Keep`s range of vision.
	Hell Keep Blink Charge (B,300,180,x1) Charge for Hell Keep`s ability.
	Adaptive Foundation (N,600,75,x1) All buildings, except Teleport and those that can produce units, can be placed on doodads.
	Decay Aura (U,600,60,x1) Hell Keep start damage all enemies around. Decay Aura damage ignores unit armor. Requirements: Great Hell Keep
	Demonic Spirits (I,600/900,60/75,x2) Increase the range of defensive structures. Requirements: Great Hell Keep
	Pinky`s Rage (O,600,60,x1) Increase the movement speed of Pinky Demons. Requirements: Great Hell Keep
	Specters (J,600,60,x1) Pinky Demon becomes invisible. Requirements: Great Hell Keep

	Hell Sight (K, 600/900, 60/90, x2) Increase the sight range of all Hell units. **Requirements**: Monastery of Despair
	Phantoms (L, 600, 60, x1) Pain Elemental spawns Phantoms instead of Lost Soul. **Requirements**: Monastery of Despair
	Demon`s Weapons (Ctrl+R, 600/1200/1800/2400/3000, 60/105/150/195/240, x5) Increase the damage of ranged attacks for T2 units and defensive structures. **Requirements**: Monastery of Despair
	Teleport Upgrade (Ctrl+T, 400/600, 60/90, x2) Reduced cooldown on Teleport ability. **Requirements**: Castle of Damned
	Reverse Teleportation (Ctrl+Y, 600, 60, x1) Units can teleport back to Teleport. **Requirements**: Castle of Damned
	Evil Eye Upgrade (Ctrl+F, 300/600/900, 60/60/60, x3) Increase the sight range of Evil Eye. **Requirements**: Castle of Damned
	Totem of Horror Invisibility (Ctrl+G, 600, 60, x1) Totem of Horror becomes invisible. **Requirements**: Castle of Damned
	Building Restoration (Ctrl+H, 600/900/1200/1500/1800, 60/60/60/60/60, x5) Health regeneration for all Hell buildings. **Requirements**: Castle of Damned
	Tower Teleportation Charge (Ctrl+V, 200, 30, x15, *) Charges for ability of Guard Tower and Totem of Horror. **Requirements**: Castle of Damned
	Resurrection (Ctrl+B, 600, 60, x1) ArchVile`s ability. **Requirements**: Altar of Pain
	Invulnerability Sphere (Ctrl+N, 1200, 150, x2, *) Charge for Altar of Pain ability. **Requirements**: Altar of Pain

UAC

Icon	Description
	Description **\<name\>** (**hot key**, **energy required**, **time required**, **levels**, *****) ***** - means that it is possible to produce this upgrade in many buildings at the same time.
	Weapons Upgrade (R, 600/1200/1800/2400/3000, 60/105/150/195/240, x5) Increase the damage of ranged attacks for all UAC units and defensive structures.
	Infantry Combat Armor Upgrade (T, 600/1200/1800/2400/3000, 60/105/150/195/240, x5) Increase the armor of all Barrack`s units.
	Concrete Walls (Y, 600/1200/1800/2400/3000, 60/105/150/195/240, x5) Increase the armor of all UAC buildings.
	Advanced Tools (F, 600/900, 60/105, x2) Increase repair/healing efficiency of Engineers/Medics.
	Lightweight Armor (G, 600, 60, x1) Increase the movement speed of all Barrack`s units.
	Expansive bullets (H, 600, 60, x1) Shotguner, SuperShotguner and Terminator deal more damage to [biological].
	Command Center Range Upgrade (V, 600/600, 60/75, x2) Increase Command Center`s range of vision.
	Command Center Flight Engines (B, 600, 120, x1) Command Center gains ability to fly.
	Adaptive Foundation (N, 600, 75, x1) All buildings, except those that can produce units, can be placed on doodads.
	Command Center Turret (U, 600, 120, x1) Plasma turret for Command Center. Requirements: Advanced Command Center
	Spotlights (I, 600/900, 60/75, x2) Increase the range of defensive structures. Requirements: Advanced Command Center
	Antigravity Platform (O, 600, 60, x1) Drone can move over obstacles. Requirements: Advanced Command Center
	Drone Transformation Protocol (J, 600, 60, x1) Drone can rebuild to Anti-ground turret. Requirements: Advanced Command Center

	Light Amplification Visors (K, 600/900, 60/90, x2) Increase the sight range of all UAC units. Requirements: Science Facility
	Stealth Technology (L, 600, 60, x1) Commando becomes invisible. Requirements: Science Facility
	Fragmentation Missiles (Ctrl+R, 600, 60, x1) Anti-air missiles do extra damage around the target. Requirements: Science Facility
	Advanced Engines (Ctrl+T, 600/900, 60/75, x2) Increase the movement speed of all Factory`s units. Requirements: Science Facility
	Mech Combat Armor Upgrade (Ctrl+Y, 600/1200/1800/2400/3000, 60/105/150/195/240, x5) Increase the armor of all Factory`s units. Requirements: Science Facility
	Fighter Laser Gun (Ctrl+F, 600, 60, x1) Fighter anti-ground weapon. Requirements: Science Facility
	Dropship Upgrade (Ctrl+G, 600, 60, x1) Increase the capacity of Dropship. Requirements: Science Facility
	Radar Upgrade (Ctrl+H, 300/600/900, 60/60/60, x3) Increase radar scanning radius. Requirements: Computer Station
	Anti-ground Plasmagun (Ctrl+V, 600, 60, x1) Anti-[mechanical] weapon for Anti-ground turret. Requirements: Computer Station
	Additional Armoring (Ctrl+B, 600, 60, x1) Additional armor for Turrets. Requirements: Computer Station
	Rocket Strike Charge (Ctrl+N, 1200, 150, x2, *) Charge for Rocket Launcher Station ability. Requirements: Rocket Launcher Station