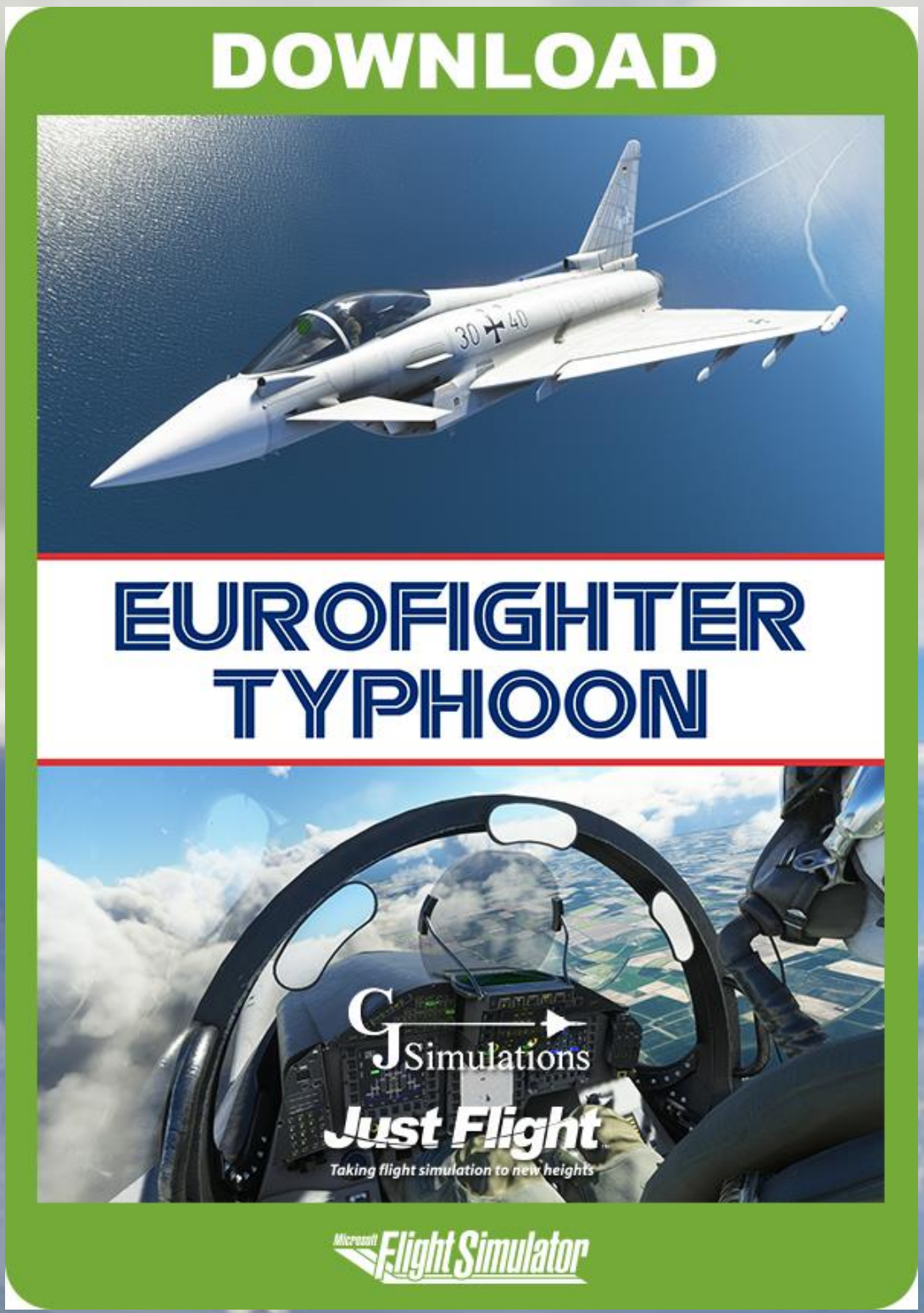
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EUROFIGHTER TYPHOON

OPERATIONS MANUAL

Welcome to the *CJ Simulations* Eurofighter Typhoon. This manual will guide you through the operation of the aircraft, and ensure that you enjoy flying the airplane.

It should be noted that although this rendition of the Eurofighter Typhoon is not "*study-level*", it is sufficiently complex to require some training to master the airplane. To get the best out of the Eurofighter Typhoon, it is required to read this manual in full.

CONTENTS

GENERAL PERFORMANCE TABLE

- **Crew:** 1
- **Length:** 15.96 m (52 ft 4 in)
- **Wingspan:** 10.95 m (35 ft 11 in)
- **Height:** 5.28 m (17 ft 4 in)
- **Wing area:** 51.2 m^2 (551 sq ft)
- **Empty weight:** 11,000 kg (24,251 lb)
- **Gross weight:** 16,000 kg (35,274 lb)
- **Max takeoff weight:** 23,500 kg (51,809 lb)
- **Fuel capacity:** 4,996 kg (11,010 lb) / 6,215 l (1,642 US gal; 1,367 imp gal) internal
- **Powerplant:** 2 × Eurojet EJ200 afterburning turbofan engines, 60 kN (13,000 lbf) thrust each dry, 90 kN (20,000 lbf) with afterburner

Performance

- **Maximum speed:** Mach 2.0 at altitude, Mach 1.2 at sea level
- **Supercruise:** Mach 1.5
- **Range:** 2,900 km (1,800 mi, 1,600 nmi)
- **Ferry range:** 3,790 km (2,350 mi, 2,050 nmi) with 3 × drop tanks
- **Service ceiling:** 19,812 m (65,000 ft)
- **g limits:** +9 / -3
- **Brakes-off to Take-off acceleration:** 8 seconds

The Eurofighter Typhoon has become one of the most famous aircraft in the world, incorporating the classic, sleek lines of a fighter and utilising some of the latest advances in computer-controlled aerodynamics. The aircraft is considered to be one of the most difficult opponents to beat in air-to-air combat, combining a relatively small size with an enormously powerful engines and perfect all-round visibility for the pilot. Developed by a European consortium as a modern, fourth-generation air dominance platform, it has since gone on to become a multi-role fighter capable of defeating *any* other aircraft in existence at the time of writing.

Equipped with a fly-by-wire control system, teardrop canopy for high visibility and pilot situational awareness, and the fighter's lightweight, small size and powerful EJ200

engines give it a truly unbeatable performance in close air-combat that keeps the Eurofighter Typhoon competitive even against today's most capable fifth-generation fighter aircraft.

Note: Weapons are only available on versions of this aircraft purchased for PC *outside* of the Marketplace, i.e, from third-party stores. This is due to Microsoft Terms and Conditions for sale on the in-game Marketplace.

AIRCRAFT FAMILIARISATION

The Eurofighter Typhoon employs the classic lines of a delta-canard and a modern fly-by-wire system that gives the aircraft its tremendous manoeuvrability. Although a naturally unstable configuration, complex calculations by the on-board computers correct for this instability, with the pilot then able to fly the aircraft in a relatively "carefree" manner, essential in a close-combat environment where airspeeds and even altitudes can become dangerously low.

The Eurofighter's consortium origins and popularity have ensured successful export sales to a number of foreign countries. Further enhancements since launch have ensured the Typhoon's future for many years as a front-line air dominance platform.

PANEL LAYOUT

The cockpit of the Eurofighter Typhoon is dominated by Multi-Function-Displays common to many modern aircraft.

The cockpit contains a full navigation suite and a full autopilot system, as well as a Heads-Up Display mounted directly in the pilot's line of sight, to relay vital flight information. Each of these displays is coded to appear as close as possible to those of the real aircraft, although there are limitations currently in MSFS that prevent a perfect rendition of the aircraft's systems, along of course with the classified nature of many modern fighter aircraft systems.

*(**Note**: Although all of the buttons and switches in the Eurofighter Typhoon's cockpit are operable, some do not have an active function assigned at this time, as the simulator does not support them in any way).*

MAIN PANELS

Left panel: Digital Entry Panel keypad, screen and BARO dial

Top Left panel: Autopilot command and Data Entry Buttons

Centre Upper Panel: Up Front Control Panel

Top Right panel: Artificial Horizon

MFDs: Multi-Function Display Screens

Right Panel: TACAN, IFF and Transponder Data Panel

The MFD screens contain the bulk of the aircraft's operational data, including options for engine, fuel and ordnance. They can also display a moving map image with navigational data.

PILOT'S LEFT FORWARD PANEL

Upper Section: Jettison switches (INOP in MSFS)

Main Section: Emergency Gear Selector (INOP in MSFS), Landing gear annunciator lights, Landing Gear lever

Lower Section: Landing and Taxi Light selector switch

PILOT'S RIGHT FORWARD PANEL

Centre Panel: Warning Display Screen

HUD

The Heads-Up Display contains basic flight information projected digitally onto a glass screen in front of the pilot. To the left of the HUD is the Angle of Attack indicator, which contains three lights to help the pilot maintain the correct AoA when landing.

The central display contains a pitch ladder at 5-degree increments, calibrated to the physical world outside the aircraft. The “Velocity Vector” is calibrated as closely as possible to represent the true path of the aircraft.

The HUD displays well under most conditions, but can be tough to see against particularly bright skies or cloud in MSFS. Although there is a brightness control, it does little to alleviate the visibility when encountering these conditions, so revert to the right MFD for flight information, or the analogue flight instruments, when required.

PILOT'S LEFT SIDE PANEL

Front section; Throttles, Canopy Switch, Stick Hide Switch

Centre section: Fuel cut-off switches (Directly behind throttles), Chocks and Covers switches (bottom right of image), Lift Dump Switch (Bottom Left of image)

PILOT'S RIGHT-SIDE PANEL

Forward section: Lighting Switches, Brightness Controls, Fuel probe (Under cover)

Centre section: Fuel pump, avionics, battery, generators, Engine Crank and APU switches

Aft Section: Miscellaneous control switches (some INOP in MSFS)

FLYING THE EUROFIGHTER TYPHOON

The CJ Simulations Eurofighter Typhoon is not designed to be "*study level*". However, it is intended to be as accurate in terms of aerodynamics as we can make them in MSFS. We also like to include the "*quirks*" of any aircraft we build, in order to try to give the user some idea of what it might be like to fly these aircraft in real life.

It is required that you learn the limitations and systems of this rendition of the aircraft in order to master it. While we have kept those essential systems and quirks to a minimum in order to preserve as much "fun" in the flying as we can, the aircraft would not be a Typhoon without them. A handy tip for newcomers is that although the Typhoon is famous for its ability to perform 9G manoeuvres, simply pulling hard on the stick and expecting the airplane to "turn on a dime" will likely result in disappointment, a dramatic loss of airspeed and an impending argument with the ground below that you're unlikely to win. High performance aircraft such as the Typhoon can indeed perform remarkable manoeuvres, but they must be handled with care and precision to avoid over-stressing them or, worse, losing control entirely and entering a spin.

If you're starting from cold-and-dark, on the apron, you will find that the aircraft will have its covers deployed. The Eurofighter is fitted with an Auxiliary Power Unit, so engine-start is a fairly straight-forward procedure with no ground power option required.

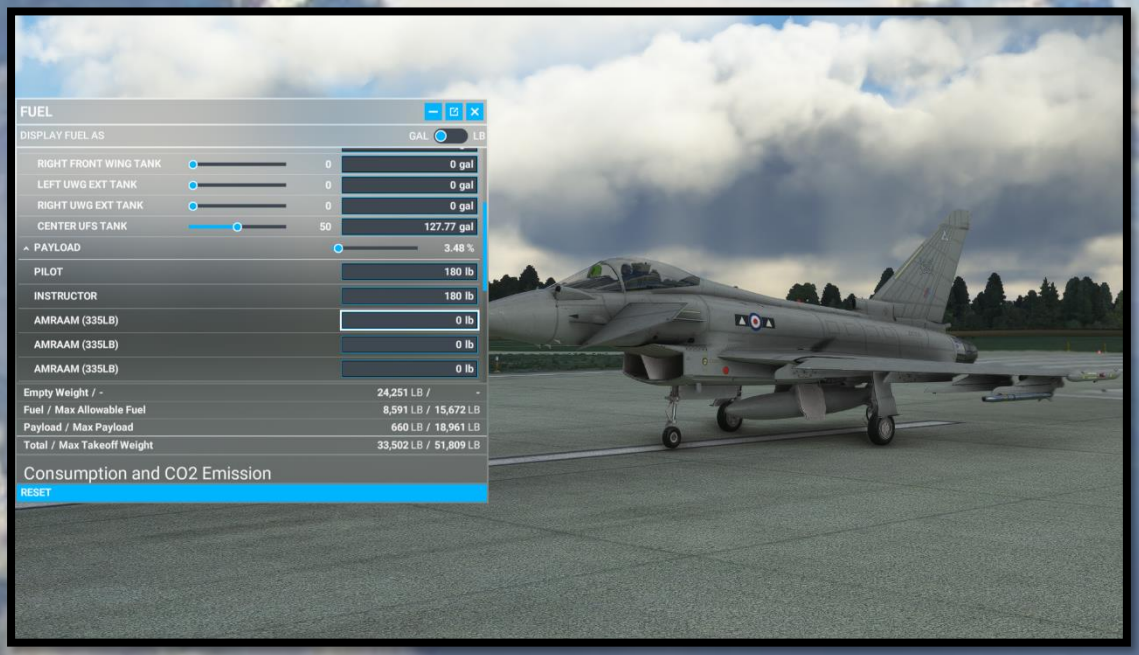
Start by using the Interactive Checklist while inside the cockpit. This will guide you through the entire start-up procedure.

CHECKLISTS

The Eurofighter Typhoon comes with a comprehensive Interactive Checklist inside the simulator, which you can use to ensure the proper start-up procedure. Just move your mouse up to the top of the screen and select the “Checklist” option. Be certain to check your fuel quantity to make sure you have enough for your flight.

Aircraft weight is something that is important to *all* aircraft. All aircraft have a *maximum take-off weight*, which if exceeded can cause the airplane to fly poorly or, at worst, not fly at all and crash. For this reason, it is advised that you select both fuel and ordnance individually and not using the menu’s “payload” slider, as this can easily put the aircraft beyond its maximum take-off weight.

If you select a full load of ordnance on the Eurofighter Typhoon, you must then sacrifice fuel-load to keep the weight below the maximum of 46,305lbs. Eurofighter Typhoon can take-off with external tanks, the required ordnance for the mission, and a low fuel-load before then going to join with a tanker to air-to-air refuel. Once airborne, the aircraft could then fill up with fuel. You can do the same after taking off and climbing out, by extending the refuel probe – doing so will add 25% to your total fuel load.



In the above image, the pilot has selected external centreline tank with 50% fuel, has internal fuel (just out of the menu shot) and has also loaded ASRAA missiles by typing in the relevant weights as listed in the stations on the right of the menu. Total weight is 24,251 with 8,591lbs of fuel aboard.

With your payload set, and fuel checked, you're ready to taxi. The Eurofighter Typhoon's flaps and slats are automatic and will detect their required settings based on a variety of aerodynamic factors, automatically adjusting themselves to provide optimum lift.

The Eurofighter Typhoon rotates at around 120 knots, with the nose up at ten degrees and held there until the aircraft "unsticks" itself from the runway. Gear retraction should be brisk as the aircraft will accelerate rapidly in full afterburner. The aircraft's auto-trim system will engage above 240 knots to assist the pilot in precision control, while the flaps and slats will retract automatically.

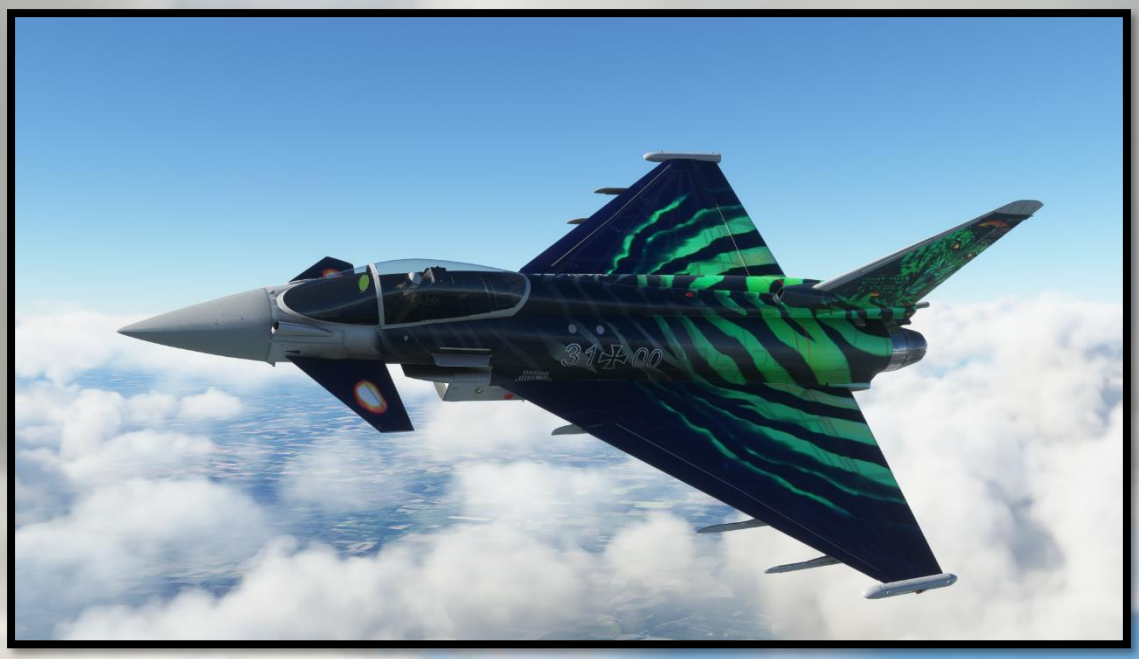
Cruising airspeed for the Eurofighter Typhoon is anywhere between 350 and 450 knots depending on mission profile. When on Combat Air Patrol, the Typhoon can "loiter" on station at 250 knots to conserve fuel.

FIGHTING IN THE EUROFIGHTER TYPHOON

The Eurofighter Typhoon was designed as a born-and-bred air-combat platform, and its handling characteristics reflect that. However, at this extreme end of manoeuvring capability, a departure from controlled flight is always much closer at hand. Being rough with the controls or just pulling on the stick and expecting to get 9Gs everywhere, will get you nowhere.

In real life, as per this rendition of the Eurofighter Typhoon, the aircraft was limited in performance in certain areas of the flight envelope. Above certain weights, the Typhoon is limited to 7G, for instance. These limitations are maintained via the aircraft's internal systems, which control manoeuvring performance based on factors such as weight and airspeed.

AIR COMBAT MANOEUVRING



For the CJ Simulations Eurofighter Typhoon, here are the basics of how to get the best out of your aircraft should you encounter a willing adversary in multiplayer;

Keep your energy up

Don't go into the fight at 900 knots with an eyeballs-out-G break into the enemy. Aim for 6-7Gs and maintain 'corner velocity' (400-420 knots). This will ensure the Eurofighter Typhoon's tightest turn *radius*, against its best turn *rate*, as you try to out-turn your opponent and gain the advantage by sliding into his 6 o'clock position.

Use the vertical.

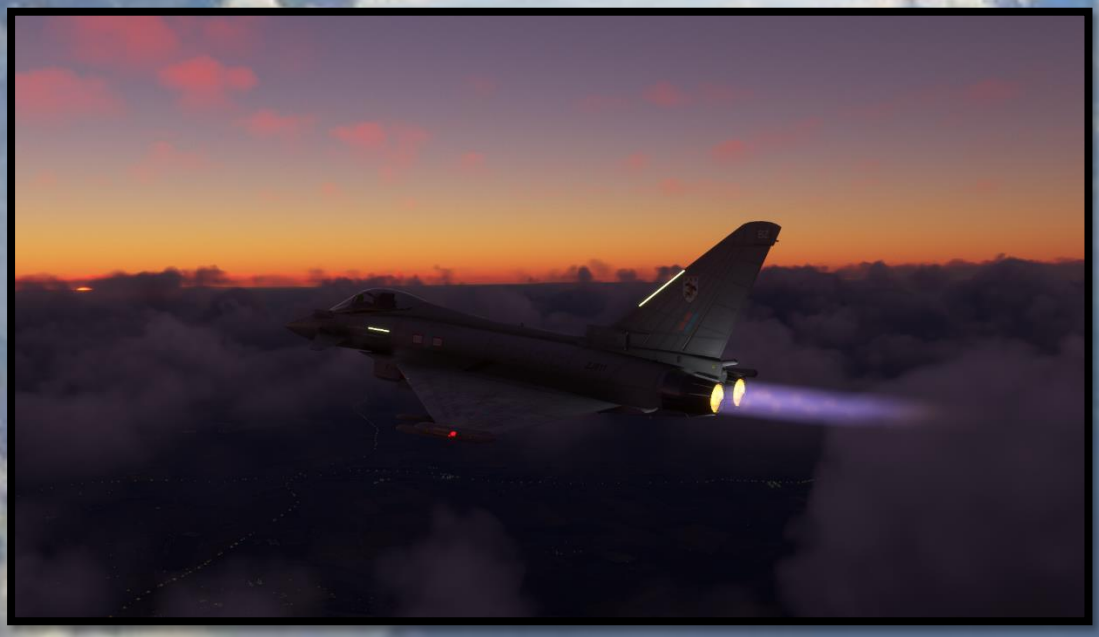
The Eurofighter Typhoon is an energy fighter, and using the vertical can force an opponent to lose situational awareness. On that note, last but not least, try to keep your eyes on your opponent…

"LOSE SIGHT, LOSE THE FIGHT"

INTERNAL LIGHTING

The Eurofighter Typhoon cockpit comes with full night-lighting options, which can be dimmed using the control knobs near the lighting switches on the pilot's right-side panel.

External lighting consists of navigation lights, strobe lights and formation lights, sometimes known as "slime lights", which allow formation flying at night.



LANDING THE EUROFIGHTER TYPHOON

The Eurofighter Typhoon is *very sensitive* to low airspeeds in the landing configuration, and requires careful handling in the circuit. All landings in the Eurofighter Typhoon are conducted in the same way. A recovery to the airbase is conducted with the aircraft entering the overhead pattern on the active runway heading, at 1,000ft and 350 knots. At mid-field, the aircraft conducts a 4G break into the downwind, slowing to 150 knots while lowering gear. The fly-by-wire's auto-trim system will automatically deactivate below around 220 knots, requiring the pilot to then manually trim the aircraft for landing. The pilot should check fuel and also calculate aircraft weight to ensure the Eurofighter Typhoon is not too heavy to land, and trim the aircraft to be light on the stick at 150 knots. The lift dump switch should be engaged before touchdown.

A curved, descending finals approach is conducted, with the aircraft rolling out onto the final with the AoA glideslope indicator showing a green circle. Over the threshold the power is cut to idle, and the Eurofighter Typhoon allowed to sink before a gentle flare to touchdown at around 130 knots. Some pilots opt to use spoilers in the final approach, others aerodynamic breaking in order to slow down on the runway. In any case, allow the nosewheel to lower gently, and then apply braking once all wheels are down.

The Eurofighter Typhoon taxies best below 20 knots with slow turns.


7L WB

AVIONICS DETAIL

The CJ Simulations Eurofighter Typhoon contains a detailed avionics suite that allows for complete automated control of the aircraft, flight-plan control, and the entry and editing of both flight plans and LAT-LON coordinates.

These systems are quite complex, but their basic functions are listed below;

MHDD MENUS

FUEL FORMAT SCREEN

In the Fuel format Internal and external fuel tanks and contents are shown pictorially. Fuel levels are displayed using blue infill which alters with respect to fuel remaining. Each tank has a digital readout corresponding to the actual fuel remaining. Fuel transfer and boost pumps within the internal fuel tanks are displayed when running. During normal operation a running pump is indicated by a white infilled circle, however a pump that has failed or has been detected as running dry is indicated as a red infilled circle.

Fuel transfer is fully automatic and is controlled and monitored by signals from the gaging and level sensing system and processed by fuel computers. In order to minimize CG movement during flight, transfer to the fuselage groups is sequenced as follows:

1. underwing external tanks (if fitted)
2. under fuselage external tank (if fitted)
3. forward transfer and aft wing tanks
4. forward wing tanks.

Softkeys

2. XFER AUTO: Default Auto transfer mode specified above. Repeatedly press of this button engage different submodes:

- UDWG: Set the external wing tanks to be emptied First
- UDFU: Set The under fuselage tanks to be emptied First
- STG1: Internal Mode fuel transfer managing between FWD and AFT fuselages.
- STG2: Internal Mode fuel transfer managing between FWD and AFT fuselages similar to STG1 but prioritizing CG within limits.

3. XFER FWD: This mode will always prioritize AFT before FWD, for a forward CG this gives the aircraft more stability but less maneuverability.

4. XFER AFT: Similar to XFER FWD but in reverse, it prioritizes the order of emptying first the FWD group and then the AFT. Maneuverability is sought with respect to stability. This can affect the angle of attack during landing.

5. TANK INTC: It has no apparent effect on the pilot, but it is used to manage the interconnection valves and correct lateral fuel imbalances.

14. REFU STOP: stops fuel entering the aircraft during air to air refueling. Requires REFUEL PROBE switch engaged (right central console)

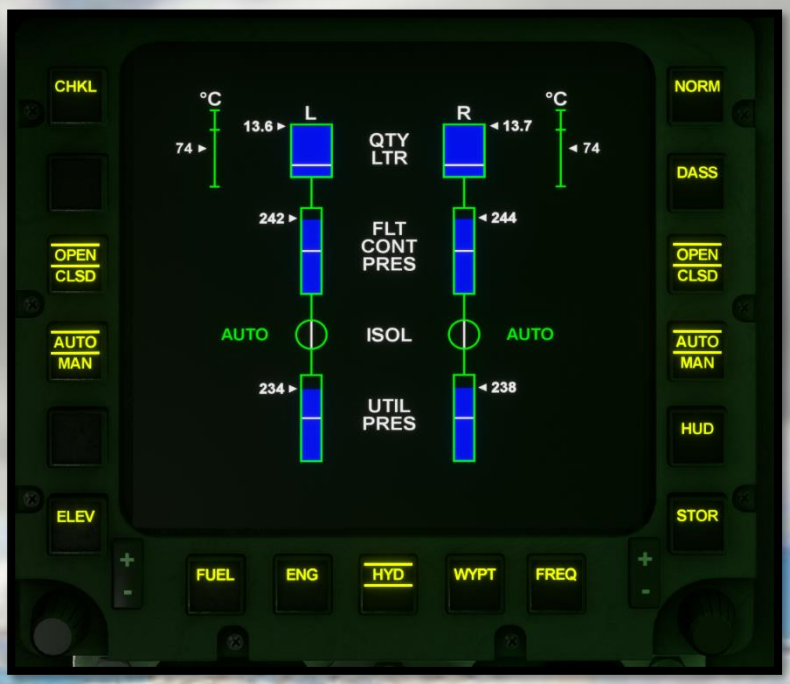
15. REFU START: Start fuel entering the aircraft during air to air refueling. Requires REFUEL PROBE switch engaged (right central console)

16. REFU: Enables tank groups to be selected for refueling. Selection of the required option (TOT, INT, SIM) is achieved by repeated selection of the key until the desired option is displayed on the key and boxed on the refueling menu.

- **TOT:** allows all tanks to be refilled, first internals, then externals.
- **INT:** allows internal tanks to be refilled.

- **SIM:** allows all tanks to be refilled SIMULTANEOUSLY.

HYDRAULIC FORMAT SCREEN



The Hydraulics (HYD) format displays a diagrammatic representation of the left and right hydraulic systems. The display shows the status of the valves and reservoirs along with associated information e.g., pressures, levels and temperatures. The information is displayed in analogue and digital form. Reservoir contents, flight control pressures and utilities pressures are displayed. If a system pressure or reservoir content within the hydraulic system falls below the safe level the associated box(es) are displayed in red and the digital readout(s) of actual contents will be displayed against a red infill. The status of the utility isolation valves is indicated by two symbols, each comprising a bar within a circle. An AUTO or MAN caption is displayed adjacent to the symbols to indicate whether the valves are being controlled automatically (by the utilities control system) or manually.

Softkeys

3. OPEN/CLSD: Enables the left hydraulic system utility isolation valve to be opened or closed manually. Can be operated when the left utility isolation is set to MAN.

4. AUTO/MAN: Enables the left utility isolation valve to be controlled manually or automatically.

14. OPEN/CLSD: Enables the right hydraulic system utility isolation valve to be opened or closed manually.

15. AUTO/MAN: Can be operated when the left utility isolation is set to MAN.

ENGINE FORMAT SCREEN

The Engine displays engine low pressure turbine speed (NL) with Turbine Blade Temperature (TBT) and nozzle area (AJ) represented by four circular displays (two for each engine). Important values are displayed by either digital or analogue readouts. Each display has an alphanumeric value corresponding to the analogue data presented, except for high pressure turbine speed which is represented by two separate rolling digit type displays (NH). Intake positions are displayed (only if auto cowl operation fails) by digital readouts and by two triangular markers which move against a fixed linear scale. The fuel flow is indicated in digital form at the top of the display. Warning captions related to the engines are also shown on this format, when applicable. The soft-keys

associated with the ENG format enable DECU lane selections to be made and other formats to be accessed.

HEAD DOWN HUD FORMAT SCREEN

The HDHUD format, displays analogue and digital readouts as presented on the HUD. Symbology presented on the format is categorized as follows:

- Attitude and directional symbology
- Navigation symbology
- Air data symbology
- Attack symbology.

The main difference between the two displays is that the HDHUD format has a circular display in addition to the HUD climb/dive bars. The circular display is divided into two sectors, one colored blue and the other brown, indicating climb or dive respectively.

Softkeys:

2. GS/M: Selects groundspeed or Mach number for display as required.

3. SRCE: It has no effect on MSFS but its operation is to Enable climb, dive, bank and VSI data source to be selected by repeated key selection until the desired option is displayed on the key.

15. BARO/RAD: As long as the RADALT switch is enabled, it will allow display of BARO ALT, RADIO ALT, or a combination of both. If the RADALT switch is instead in the off position, pressing this button will have no effect on the HUD and only BARO altitude will be displayed. RADIO ALTITUDE will only be visible in an altitude radius less than 5000ft, however in RAD mode its value will be displayed on the BARO indicator.

RADIO FORMAT

The Radio (FREQ) format, shows the V/UHF frequencies for the two manual channels and the 24 variable frequencies in a radius of 200NM shown on pages of 12. The data presented is based on three categories: VOR (VHF), ARPT (UHF) and NDB (ADF). This format is only limited to displaying information. Well, the frequency tuning is done through the central knobs, the HDD or the DEP under the MDE RAD1 and RAD2 submenus.

Softkeys:

2. RAD1/RAD2: Switch between RAD1/RAD2 Frequencies displayed on the page.

3. PAGE/UP: Displays the 12 first Frequencies sorted by distance

4. PAGE/DOWN: Displays the 12 latest Frequencies sorted by distance

5. LIST VOR/ARPT/NDB: Swaps display frequencies between VOR (VHF), ARPT (COM), and NDB (ADF)

WAYPOINT FORMAT

The Waypoint Format (WPT) displays information associated with the Master Waypoint List, Auto Route, and Manual Route as three separate waypoint lists. The lists are mutually exclusive and can be accessed by selecting three softkeys named WPT LIST, AUTO RTE, and MAN RTE. It must be said that this page is currently under development since it currently shows the waypoints defined in a Flight plan. In the future it will add the ability to display a manual route as an Alternate Flight Plan or a subsequence of Waypoints from the Master Flight Plan, but it is currently under

development. It shows all the waypoints defined in the flight plan as well as the current active waypoint, however it does not show the waypoints defined in an approach procedure since it comes from a different source (although it can be viewed on HDD).

Softkeys:

2. WP/LIST: By default, it shows the master list of Waypoints defined in a FlightPlan. As well as the Active Waypoint in Cyan.

3. AUTO RTE: It would show the automatic sequence of the Waypoints

4. MAN/RTE: It would show the Manual sequence of the Waypoints defined by the user

5. PAGE DOWN: Scrolls through the list of waypoints from first to last, when the list of waypoints exceeds the offset of waypoints to display.

15. TYPE: Restricts displayed waypoints to a specific type.

PILOT AWARENESS AND HSI

The Horizontal Situation Indicator (HSI) format, displays the following TACAN or navigation system derived data:

- Compass Rose
- Plan Range (Nav mode, GPS mode)
- Slant Range (TACAN mode)
- Bearing Pointer
- Course Readout
- Course Pointer
- Heading Marker
- Autopilot Demanded Heading
- Current Aircraft Track Pointer
- Lateral Deviation and Scale
- To/From Flag
- Current Destination Waypoint Number (Nav mode)
- TACAN Channel Number and Type (TACAN mode)
- TACAN Mode Indication (TACAN mode).
- VOR Freq number and Type
- VOR Mode Indication (VOR Mode).

Softkeys:

1. MAG/TRUE: Switch between Magnetic heading or True.
2. TRK/NORTH: Selects the display orientation between 'track up' and 'north up'
3. COMP/360: Enables one of two compass roses to be displayed on the PA format 120° or 360° if required.
4. MAP/TAC: Its function in MSFS when TAC is enabled would be to show the location of the traffic on the map. It shows both NPCs and players, although they do not distinguish between them.15. TYPE: Restricts displayed waypoints to a specific type.
5. AIR: Filter the elements displayed on the screen in 4 categories: LRTE (low route) HRTE (high route) LYMPH (low info) OFF.
6. MAP: Enables the map type to be selected, options include FINE (fine), MED (medium) and CRSE (Coarse).

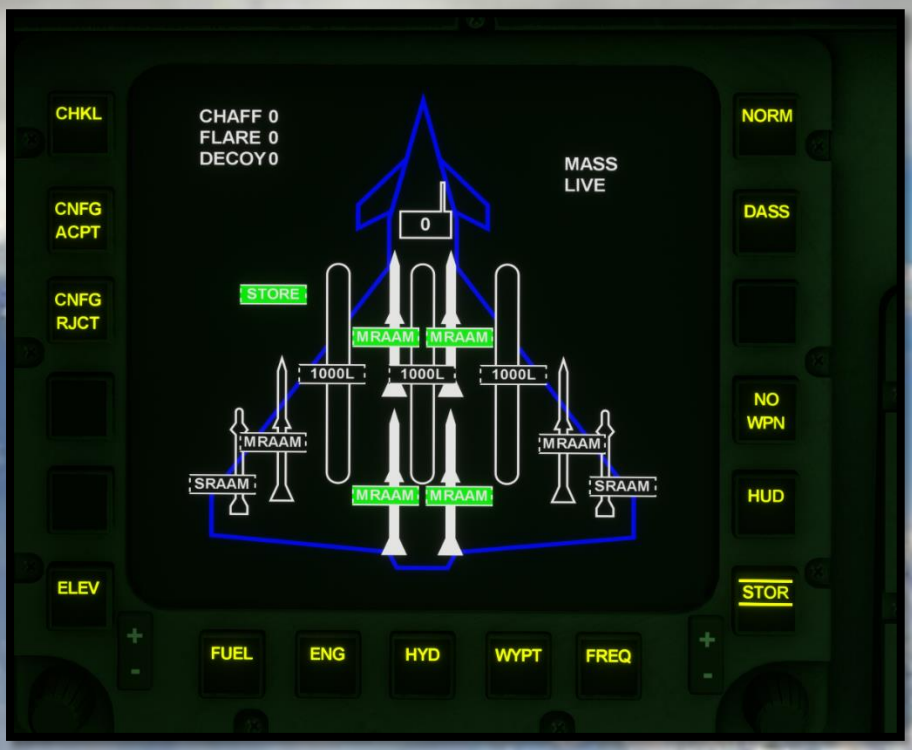
7. TACT: Changes the tactical data declutter selection between MAX and MIN settings (Traffic range in MSFS). NOR is displayed to indicate normal state. Available when the TAC or MAP+TAC options are selected.

8. RNG: Map zoom ranges between 160NM and 0.5NM. Repeated pressing of this key varies between 160,80,40,20,10.5,2,1 and 0.5 Nm.

11. PA/HSI: Basically, enable/disables the map. HSI will only shows the compass in a black screen.

13. A/C / GND: Switch Between HDG Mode and TRK Mode.

STORES FORMAT



The Stores (STOR) format, shows a schematic representation of weapon system status and current store configuration. the different stores are represented by symbols outlined in white at the positions relative to its host storage station. In MSFS, when a Payload is defined from the UI screen, it will be displayed here. That is, this menu only shows information, it is not a management page.

MDE MANUAL DATA ENTRY FACILITY (MDEF)

The Manual Data Entry Facility (**MDEF**) is located on the left glareshield and is part of the Displays and Control (D&C) system. It is used for moding and data entry to several avionic systems.
The MDEF consists of the following:

- Subsystem keys.
- Moding keys.

There are thirteen subsystem keys, one of which is the set waypoint key (SWP) located separate to the other subsystem keys. The MIDS, A/S and NIS keys currently have no function. The subsystem keys allow moding and data entry to the following functional groups, called the MDEF subsystems.

- Autopilot (AP).
- Navigation (NAV)
- Navigation aids (AIDS)
- IFF interrogator (INT)
- IFF transponder (XPDR)
- Radar transmitters (XMIT)
- Radio 1 (RAD1)
- Radio 2 (RAD2)
- Defensive aids (DAS)
- Miscellaneous (MISC)
- Set waypoint (SWP).

AP Submenu

The **AP Submenu** is not a menu that exists in the real aircraft, but it has been implemented this way because many of the autopilot functions are performed from the

throttle quadrant itself, which in MSFS can be frustrating to manipulate by both a gamepad as with a mouse, hence its existence.

The **non-softkeys** related with **AP operation** that do not correspond to the submenu are **AP/AT, HDG, TRK, ALT, CLM and APP**, and may or may not be activated outside the Submenu. The AP button however activates the submenu. **Note that if AP submenu is enabled the button AP will light up, but it does not mean that Autopilot is activated (AP is enabled by the AP Softkey).**

MDE AP Softkeys:

- **AP: ON/SBY** => Activate or deactivate the autopilot.
- **ALT MODE:** HOLD, SEL. Hold mode will hold the current altitude, while SEL mode will capture the target altitude.
- **SPD MODE**: HOLD, SEL, AWLS and SCRS => **HOLD** mode will capture the current AIRSPEED or MACH, while **SEL** will capture the target speed set by arrows up down in the DAS box (or DMA). **AWLS** mode is used in conjunction with Autothrottle to set recommended speeds for an ILS landing, when the frequency is valid and GlideSlope has been captured. The speed is calculated by interpolation between empty weight and Gross weight and the resulting speed will try to maintain an angle of attack between 9 and 12 degrees, this angle of attack will increase if airbrake is used. The speed set by AWLS will increase according to the bank of the aircraft as well as the deviation from the GSI. AWLS can be selected at any time if autotrottle is on. That is, if you have not deployed a landing gear yet, it will set 250 knots, it is at the moment of capture of the GS when it will begin to set the calculated speed. **SCRS** mode will apply the recommended supersonic speeds to maintain a supersonic cruise without using Reheat. However, during an Autothrottle climb or descent, the Reheat can be activated if needed. SCRS should be considered for leveled flight. Super cruise will apply an interpolated value from mach 1.05 at 10k Ft to 1.55 at 60K Ft.
- **TARGET ALT**: Shows the current or target value of the Autopilot. Selecting this function in ALT SEL allows you to vary the target altitude using the UP down Arrows.
- **TARGET DAS/DMA:** Similar to ALT SEL but applied to MACH/IAS.
- **TARGET VS/FPA (Flight Path Angle)**: When **CLIMB MODE** is set **on VS or FPA and not AUTO**, this softkey displays the target Vertical Speed or the converted Flight Path Angle Value.
- **ARROWS UP/DN:** When **ALT SEL, SPD SEL modes** or **VS/FPA climb modes** are selected, arrows will allow to vary the target values for Altitude, Airspeed/Mach or VS FPA values respectively when one of the previous Softkeys is selected.
- **CLIMB AUTO/VS/FPA:**

When CLM button is pressed and **CLIMB AUTO** is selected, **this function will determine the optimum altitude climb or descent pitch angle based on maintaining a target airspeed or mach**. It can be used in conjunction with the

other speed modes but must not be used in conjunction with the approach mode and an ILS landing under any circumstances. It should be thought of it as **Flight Level change mode**.

When CLM button is enabled, **CLIMB VS/FPA** and a **TARGET ALT** is selected, the aircraft will climb or descend according the **TARGET VS/FPA values**. In this case, VS values are clamped between -9000/9000 fpm, while FPA is a conversion based between targets **VS and DAS/DMA.**

Note: in order to use CLM, the target altitude cannot match current altitude.

NAV Submenu:

Nav submenu is part of the navigation system, and is dedicated to the creation, modification, deletion of waypoints in conjunction with the DEP, as well as the selection of different steering modes to be used with the HDG or TRK buttons from the autopilot. Some features would have no effect in MSFS, others are yet to be implemented. They are discussed below.

MDE NAV Softkeys:

- **AUTO/MAN RTE:** Allows to switch between a previously defined FPLAN or a manual one with points defined by the user. If there is no manual flight plan any selection will have no effect (it will work in AUTO mode). **(To be implemented in an update).**
- **L/L GREF:** This mode **has not been implemented at the moment**, however, it is explained below => the **L/L** mode allows WPT's to be defined by coordinates in the **DEP** when using **SWP**, while the **GREF** mode would allow WYPT's to be defined by **Geo reference** points when clicking on a map **(this function is not currently supported at the moment).**
- **EDIT RTE:** It will allow the editing of the longitude, latitude and elevation values of a waypoint through the DEP (function enabled by default when the NAV submenu is selected).

- **CHD:** Defines the next target Waypoint as the Previous Waypoint, as long as there is a Previous Waypoint that has already been passed. This does not alter the original Flight Plan. **(To be implemented in an update).**
- **STR/HOLD:** Hold mode allows HDG to be varied by means of the corresponding knobs when the AP is activated and HDG or TRK are enabled. STR sets courses automatically based on an active FPLAN or tuned VOR/TCN freq.
- **CHNG DIR:** Invert the original flight plan.
- **AUTOWIND:** takes the speed and course data automatically.
- **TRK/DIR:** these are two different modes to use with STR enabled.
- **SETWIND:** takes the speed and heading data manually through the DEP **(To be implemented in an update).**
- **DEL MAN:** Allows to delete Waypoints from a Flight Plan from the DEP.

AIDS Submenu

The AIDS submenu is part of the Navigation system and is dedicated to manage steering sources: GPS, LINS, TACAN, VOR1, VOR2. Depending the mode selected, pilot may track a GPS route, intercept VOR or TACAN stations, and capture Glideslopes during ILS approaches or landing procedures.

AIDS SubMenu1:

AIDS Submenu1 is dedicated to TACAN Navigation basically.

MDE AIDS SubMenu1 Softkeys:

- **TAC ON/SBY:** Enables the TACAN steering source to be used in conjunction with the TRK or APP Autopilot function. It provides the user with information for lateral guidance, distance, bearing, deviation… and can be displayed both through the HUD and the HSI. This function activates TACAN DRIVES NAV.
- **TAC DATA:** By default, it allows the user to enter both the channel and the XY mode through the DEP.
- **PP GPS:** By default, it allows the user to enter both the channel and the XY mode through the DEP.

- **TAC AA:** Selects TACAN Air-Air Mode. No effect in sim.
- **NAV MODE:** switch between NAV AIDS Submenu1 and Submenu2.
- **TAC AS:** Selects TACAN Air-Surface Mode. No effect in sim
- **AIR ALIGN:** Not implemented.
- **TXRX:** Tacan Transmitter and receiver mode enabled.
- **RX:** Tacan receiver mode only.

AIDS SubMenu2:

AIDS Submenu2 is dedicated to GPS and VOR steering source Navigation. By default, GPS navigation is enabled (NAV AUTO), selecting GPS as the primary source. For VOR navigation or ILS Approaches, VOR1 or VOR2 needs to be switched to ON. Despite multiple selectable options available in this menu, MSFS only support 4 Steering sources, GPS, TACAN, NAV1 and NAV2, selecting any of the options NAV AUTO, LINS GPS1, GPS2 or FCS GPS will have the same effect.

MDE AIDS SubMenu2 Softkeys:

- **NAV AUTO:** enables GPS Drives NAV to be used with TRK button.
- **VOR1 ON/SBY:** disables GPS Drives NAV to be used with TRK button or APP. Needs a valid VHF1 Frequency.
- **VOR2 ON/SBY:** disables GPS Drives NAV to be used with TRK button or APP. Needs a valid VHF2 Frequency.
- **LINS + GPS1:** same as NAV AUTO.
- **LINS + GPS2:** same as NAV AUTO.
- **FCS + GPS:** same as NAV AUTO.
- **LINS FIX1:** not implemented as LINS is not a supported Steering mode in MSFS
- **LINS FIX2:** not implemented as LINS is not a supported Steering mode in MSFS
- **FCS FIX:** not implemented as FCS is not a supported Steering mode in MSFS.

IDENTIFICATION SYSTEM (IFF)

The Identification Friend or Foe System (IFF) comprises of the IFF Interrogator and the IFF Transponder. For identification of other aircraft, the interrogator will transmit an interrogation signal which will or will not be answered by a recognizable transponder signal. The answers are then categorized friendly or unknown and are displayed against the radar plots. Actually, interrogation is not supported in MSFS atm. Anyway, the two menus have been implemented, being the INT functions associated with a second Transponder, in case MSFS supports this mode in the future.

XPDR Submenu:

XPDR Submenu Softkeys:

- **SBY/NORM:** Toggles XPDR to ON or STBY (needs XPDR switch in right rear console switched to on in order to work).
- **MODE 1:** Selects/Deselects MODE 1.
- **MODE 2:** Selects/Deselects MODE 2.
- **MODE 3A:** Selects/Deselects MODE 3.
- **MODE 4A:** Selects/Deselects MODE 4 (only available if CRYPT Switch is set to ON).
- **MODE C:** Sets XPDR to ALT mode
- **MIL/CIV:** Selects between MIL and CIV emergency codes transmitted when EMGY is selected (default is MIL).
- **1/3A CODE:** Default, allow to set/store XPDR frequencies in the DEP.
- **ACC/MAN:** Allows between automatic code change or manual. **Not implemented as enters in conflict with in game ATC auto communications.**
- **MODE S:** Sets ident mode to ON.

INT Submenu:

INT Submenu Softkeys:

- **SBY/NORM: Toggles INT to ON or STBY (needs INT switch in right rear console switched to on in order to work)**
- **MODE 1: Selects/Deselects MODE 1.**
- **MODE 2: Selects/Deselects MODE 2.**
- **MODE 3A: Selects/Deselects MODE 3.**
- **MODE 4:** Selects/Deselects MODE 4 (only available if CRYPT Switch is set to ON).
- **MODE C:** Sets XPDR to ALT mode;
- **ACTV:** This enables the active decoding and display of the Mode 1 and 3A codes of the responding target on the MHDD. (No effect on MSFS)
- **1/3A CODE:** Default, allow to set/store IFF frequencies in the DEP.
- **ACC/MAN:** Allows between automatic code change or manual. (Not implemented).
- **AUTO SPEC:** Selects Auto Specific interrogation (Not implemented)
- **INT ALL:** The system interrogates all existing A/A radar tracks held within the system and within scan coverage. (Not Simulated).

XMIT Submenu

The purpose of this menu is to normalize or mute the various transmission channels of the aircraft, including RDR. By selecting PROG, the channels can be muted or normalized simultaneously by ALL Softkey or muted or normalized individually by each softkey.

RAD1/RAD2 Submenu:

RAD Submenu has identical functions for RAD1 RAD2 communications, allowing the user to set VHF and UHF Frequencies manually from DEP among other things.

RAD Submenu Softkeys:

- **TX TIME:** Allows the pilot to transmit his time (time of day, TOD) to a receiving platform. Different times may be used for radio 1 and radio 2. When this function is selected, the RX TIME function is. Note that in order to use TX, RAD1 or RAD2 or both switches in right bottom console needs to be set to ON.
- **RX TIME:** Allows the pilot to receive an operating time from another platform. When this function is selected, the TX TIME function is occulted
- **MAN/PSET:** Allows the operating frequencies to be defined by the pilot for both manual and preset channels. **(Not Implemented)**
- **SQ ON:** Deselects the automatic squelch facility, to assist in hearing weak signals at the expense of increased background noise (only in clear mode).
- **NRW/BRD: Sw**
- **NORM/LOW:** Selects between **NORMAL** and **LOW** transmitter power output, to reduce emission power and enhance stealth characteristics**.**

- **HAIL ON:** Allows the pilot to select the Saturn Hail mode, through which a caller can attract the pilot attention that communication is required on a predefined frequency.
- **GRDU/GRDV:** Selects the guard receiver to either the UHF or VHF guard frequency.

DEP (DATA ENTRY PANEL)

The DEP is a data input device composed of a screen and a keypad made up of numeric buttons from 0-9, alphanumeric N, S, E, W, and ".", selector functions UP/DN to scroll through the fields and the CLR and ENTER functions to clear or confirm values. Depending on the MDE submenu in which we find ourselves, we can perform various functions such as creating Waypoints by coordinates, editing waypoints and deleting waypoints, as well as entering V/UHF and IFF communications frequencies. It is planned to extend its functionality through updates.

Set Waypoint Menu (SWP)

Set waypoint menu offers us the possibility of creating custom waypoints through coordinates, unlike the HDD, which allows us to select coordinates by ICAO. It consists of three fields: Waypoint number, where we can enter a value between 0 and the maximum of our FPLAN, depending on whether we want to insert before or after a waypoint, at the beginning or at the end of our FPLAN:

1. **Press SWP button. Type a number within the min and max range number value of the FPLAN and press enter:**

2. **Press DN key to select LAT and enter the coordinate in the format N00000000 or S00000000, and press enter:**

3. **Press DN key to select LON and enter the coordinate in the format E000000000 or S000000000, and press enter:**

4. **Press DN key to select Accept and enter to confirm (otherwise reject):**

our new waypoint will appear in the WYPT page (check number "WP005"in the image):

EDIT WYPT

Edit waypoint menu is the first option available when selecting NAV Submenu in the MDE. It allows us to edit the coordinates of an already created waypoint. It differs from SWP in that we can also edit the Elevation of the Waypoint (since it is not possible during its creation). The operation is similar to SWP, select waypoint number and edit the data, but there is no ACPT or RJCT field, so pressing enter modifies the value directly.

Set value:

Press enter to store:

DELETE WYPT:

Delete Waypoint is the simplest of the three menus and is accessible through the SOFTKEY DEL/MAN of the NAV SubMenu. We only have to select a waypoint number and press Enter Key.

Use UP/DN Keys to select a Waypoint:

Press Enter to Erase:

Done.

RAD1/RAD2 Menu

This menu allows the user to input VHF1 or 2 (VOR) or UHF1 or 2 (COM) frequencies and is accessed by pressing any of the RAD1 or RAD2 buttons on the MDE. Using the UP/DN keys we select VHF or UHF, enter the value and press enter to confirm.

Input Frecuency:

Press Enter:

Done.

XPDR/INT Menu

This menu allows the user to store 4 preselected XPDR or INT Frequencies before setting to active and is accessed by pressing XPDR or INT buttons from the MDE. Using the UP/DN keys we select any of the fields to store a preselected value by enter. In case no value is enter the selected value will be set to active:

Input Frequency:

Press Enter to store:

Press Enter again to store to active:

Done (4525 is the new active value).

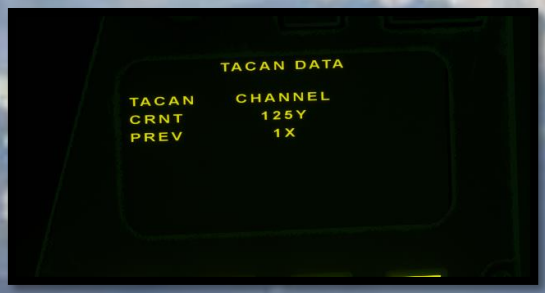
TACAN Menu

TACAN MENU is accessible by pressing TAC DATA softkey from AIDS SubMenu1. Input a value and pressing Enter Stores the active channel. Pressing Enter without value swaps from X to Y and vice versa:
Press TAC DATA

Input value:

Enter to confirm:

Enter to swap Mode:



DEVELOPER NOTES

At the time of writing the manual for this aircraft's launch, Microsoft Flight Simulator is still in many ways a work-in-progress. Features that we expect to come to the flight simulator are not yet present, many variables are not yet active, and as developers we have not yet mastered all aspects of the simulator.

As time progresses, this and our other products will be continuously updated to match further advancements of MSFS. The new simulator has, we hope, many successful future years ahead of it, and as more features come on-line we will be keen to ensure that the Typhoon remain at the cutting edge of what's possible for fighter aircraft. As with all launches by CJ Simulations, expect this rendition of the Eurofighter Typhoon to get ever better as Microsoft Flight Simulator becomes more established at the forefront of flight simulation software.

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SOFTWARE PIRACY

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Recently, two commercial flight simulation developers purchased a clean computer and used it to download their own products from well-known piracy sites, so that they could see what had been done to them. Unsurprisingly, all of the products were bloated with malware – Trojans, data-mining software and others, some quite advanced and well-hidden from anti-virus software. Everybody who has ever downloaded pirated software from such sites now has those infections on their home computers. Anybody who thinks

otherwise, that piracy site owners create and pay for these sites out of the kindness of their hearts, is incredibly gullible.

A pirate, otherwise known as a thief, makes a profit from the sale of other people's hard work. In some cases he makes more profit than the publishers and developers make from the sale of an original title. Piracy is not just the domain of the casual domestic user in his or her back room, but is also a multi-million-pound business conducted by criminals often associated with the illegal drugs trade. Buying or downloading pirated copies of programs directly support these illegal operations.

Don't be fooled by a load of old tosh about file 'sharing'. The sites that host these 'shared' files cover their backsides with the excuse that they are simply a 'gateway' to the files. In fact, they actively encourage piracy and are often funded by advertising. Most of them are illegal money-laundering operations by another name.

The people who really suffer from game piracy are the artists, programmers and other committed game development staff. Piracy and theft directly affects people and their families. Loss of revenue to the games industry through piracy means many are losing their jobs due to cut-backs that have to be made to ensure developers and publishers survive. The logical outcome of this is that eventually the supply of flight simulation programs will dry up because developers think it is not worth the hassle.

It's not just copying software that is against the law. Owning copied software also constitutes a criminal offence, so anyone buying or downloading from these people is also at risk of arrest and prosecution.