FlightGear Mirage 2000 Manual

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1 FlightGear Mirage 2000 Documentation

Welcome to the documentation of the Dassault Mirage 2000 for the FlightGear open source flight simulator.

The Mirage 2000 modelled here is mainly the -5 version (“Dash 5”/”tiret cinque”). The bi-place versions 2000D/N and 2000-B are also modelled to some degree (weapons, exterior 3d), but the cockpit remains the -5 version.

The Mirage 2000 is a multi-role all-weather fighter aircraft from Dassault Aviation. It is one of the best dogfighters and a far beyond visual range combat aircraft, as well as very capable in air-to-ground strikes.

1.1 This Manual

The goal of this manual is to be the most up to date source of information for pilots of this simulation model - in line with recent development of features. As such it documents how the FlightGear Mirage 2000 works - not necessarily how it works in reality!

This manual has been written in order to help you get to know the Mirage 2000 and master flying and fighting with it. The French Delta Knife is not always easy to handle, but we hope the pages in this manual will allow you to become better at fighting with the M2000.

If you find rooms for improvement in this manual, then please either ping one of the authors on Discord or create

an Issue in the GitHub repo.

1.2 Other Documentation

Apart from this manual, there are other sources of documentation for the FlightGear version:

- The wiki page on the official FlightGear wiki (not very well maintained).
- The original manual `Mirage 2000 manual.pdf` by Renaud "Wolf" Roquefort in PDF format in the "Docs" folder. It is the original source of this manual and will eventually be replaced).
- The main and original author of the FlightGear version has some 5H1N0B1 YouTube videos (a bit aged).
- The excellently modelled FlightGear version of the F-16 has a very well written wiki, which also explains concepts (e.g. how a radar works).

RAZBAM has made a remarkable simulation of the Mirage 2000C variant for DCS. There is quite some documentation for it and an active forum, but it is an earlier variant for the Mirage 2000 and therefore has somewhat other capabilities and a distinctively different cockpit.

1.3 Credits

- Renaud "Wolf" Roquefort has written the first extensive documentation. This manual is an enhanced copy of it - and the current author would have felt too overwhelming if there would not have been such a great source. The acknowledgements in Wolf's original work are as follows: "I would like to thank everyone who helped me on this project. My first words of thanks go to S. "VooDoo3" Liakos, who gave me the idea of the manual in the first place, and for being a supportive friend. I am not certain this manual would exist without him. I thank I. "Interce" Klimov, 5H1N0B1 and CUDA22 as well for their support during the creation of this manual. Thank you to all who did changes and improvements to this manual, or pointed out things to modify: Legoboyvdlp, Rudolf, CUDA22, Reaper, and 5H1N0B1 himself."
- The authors of the model: Helijah (3D), 5H1N0B1 (Weapons, Systems), Richard Harrison (FDM), Leto, Josh Davidson (FCS/FBW/Autopilot), hardball, Domokos Juttner (Rudolf), F-Sig, J Maverick 16, legoboyvdlp, onox, ravenclaw_007, Niall "Salmon" Roe, Marsdolphin, R. "Wolf" Roquefort, Rick Gruber-Riemer
- The authors of the common weapons and radar systems for OpRedFlag, on which this model depends and which makes it possible, to use the plane in air and ground attack as part of military simulation in the OPRF (Open Red Flag) community.
- The authors of the FlighGear F-16 are a constant source of inspiration - and the level of sophistication of the model is what the M2000 is aiming for, but maybe never will get on par with.

1.4 License

This FlightGear Mirage 2000 model is licensed with GNU GPL version 2. See the licence information in the repo.

2 Flying

2.1 Operations

2.1.1 Start-up

When your aircraft is cold and dark before start-up, the external generator and fuel truck are connected to your aircraft, and protections (in red) will be on your aircraft, as well as chocks. They will disappear automatically as you start up. With the } key, you can auto-start your aircraft.

2.1.2 Taxi

The Mirage can taxi at relatively high speeds, usually below 40kts, but you shouldn't go faster than 20kts when turning. Even if the track width is larger than usual, you should always stay at safe speeds.

The front gear can turn 90° to the left and to the right, so a turn radius of 3 meters is reachable. You might need to add thrust, as it is difficult to move with the front gear almost entirely turned. Do not push on the rudder pedals too much when braking, otherwise the aircraft may fall on one side or another if you turn too tight.

The taxi lights have an angle of about 30 degrees in front of the aircraft and are not attached to the moving part of the front gear, so they will always light in front.

2.1.3 Take-off

Line up on the best runway for the current weather conditions and ask for clearance. Once the clearance is given and after releasing the parking brake, spool up while keeping the pedal brakes enabled. Then, throttle up to 99% RPM (military power) for long runways, 100%+ (with afterburners) for short runways or with heavy loadout. Rotate speed is at 120 knots when using a clean loadout, 140 knots if with payload. After this, bring the inverted "T" in the HUD under the line of horizon and you should be able to lift off at 170-190 knots, depending on your loadout. Do not exceed 14° nose angle or you will tail-strike. Even though the Mirage is airborne, you might feel that the plane with high nose angle "floats" over the runway until reaching well beyond 200 knots. Raise the gears with key `g`.

The Mirage needs long runway distances to take off, as it hasn't got a separate horizontal tail stabilizer/elevator. Because of the elevons' position (trailing edge of the wing), they create a considerable loss of lift when they are moved up to rotate, so higher rotation speeds are needed. Also, the delta wing is often called "flying airbrake", as they generate lots of drag at high angles of attack, like at take-off. This is why high speeds and long runways are needed.

2.1.4 Initial Climb

After taking off, retract the landing gear before reaching 280kts (maximum gear extension speed). You are advised to follow the runway heading until you are at an acceptable speed (approximatively 200 knots), but if you used reheat and you are not heavy, you can turn as soon as you are at 200 knots. However, you have to watch your speed so you don't stall - at this altitude, a stall doesn't forgive.

After having chosen the correct heading and having attained 250 knots, you can commence your climb with full military power, at the beginning around 2,000 feet per minute to gain speed, and when you have reached your optimal climb speed you may pull the nose up to climb at a rate of 4,000 feet per minute. Remember that if you are faster, you will have an lower angle of attack and will thus drag less, and your elevons will not need to be pulled fully up (and thus will not create too much additional loss of lift), so it is advised to speed up before climbing too fast.

2.1.5 Climb

The Mirage can climb exceedingly fast, with a maximum climb rate of 6,000 feet per minute. With full tanks and air-policing loadout, it is able to climb with full military power at a rate between 4,000 feet and 6,000 feet without bleeding speed (between 250 and 300 knots). With full afterburners and in the same conditions, the climb rate can go up to 12,000 feet, still in zero/zero conditions. If going vertical with full afterburners and a base speed of 400 knots, you can reach 20,000 feet before having to push the nose back down. This is the fastest way of climbing.

2.1.6 Cruise

The Mirage 2000 normally cruises between angels 35 and angels 40 (35,000 - 40,000 feet), and this is the best altitude for Mach 2+ flights. It can also go above 50,000 feet (the pilot would need special equipment - not simulated yet), and up to 80,000 feet, but with difficulties. The optimal cruise altitude is 36,000 feet.

While it has a bi-sonic flight possibility, it consumes lots of fuel. It is thus advised to stay sub-sonic during cruise flights, without using afterburners. With cargo loadout and without using afterburners, the Mirage can fly for more than two hours. For long cruises, it is advised to use the navigation, altitude and speed autopilots.

2.1.7 Visual Landing

Lower the gears when you are below 195 knots, then approach the runway at 175 knots (for 15% fuel left; add 5 knots every 20% additional fuel). If by night, put the landing lights on. On final approach, hold an angle of attack of between 6 and 9 degrees. When passing the runway threshold, flare and bring the aircraft to an angle of attack of 12 degrees. You should land at 145 knots (for 15% fuel left; add 5 knots every 20% additional fuel). When touching down, wait for the aircraft to slow down to 135 knots and apply pedal brakes. Use the brake parachute (key `o` to deploy) if necessary

(heavy loadout or short runway) - and then release when not needed any more (same key `o`).

The easiest way to get approach and touchdown right is placing the inverted "T" at the bottom of the HUD on the runway threshold and regulate speed with throttle, such that the flightpath marker is on top of the inverted T. When at speeds below 200 and high angles of attack you have to be ready to apply quite some throttle to keep a steady decent rate!

2.1.8 Navigation

To switch between displaying heading in true North vs. magnetic North, use the second button from right on the lower button row of the VTB.

2.1.9 Miscellaneous

- When heavily loaded, the fly-by-wire system (FBW) should be set correctly to lower allowable flight limits in order to save the structure: `Mirage2000=>Options=> Change A/A to CHARGES`.
- Afterburners engage when throttle moves past 85%.
- The 1700l dropable tanks are not supersonic.

2.2 Flight Modes

There are 4 flight modes:

- Take-off (`key: f`)
- Approach (`key: F`)
- Navigation (`key: h`)
- Attack (`key: H`)

The main difference between the flight modes for now is the view position and zoom. When you lower gear, then you get automatically into `Approach` mode - after gear up you end in mode `Navigation`. Toggling the master arm switches between modes `Attack` and `Navigation`.

2.3 In Cockpit Views

In order to see the MFDs and the VTB better as well as seeing better the gauges on each side of the VTM, you can use key bindings:

- `Key: n`: view left MFD and VTB
- `Key: N`: view right MDF and VTB
- `Key: ctrl-n`: reset the view to the position of the current flight mode

3 The Radar System

3.1 The Real Radar RDY

The -5 version of the Mirage 2000 is equipped with the RDY (Radar Doppler Modèle Y - Radar Doppler Multitarget), which can be used in air-to-air and air-to-ground tasks. See descriptions in English Wikipedia and radartutorial.eu.

3.2 The Modelled Radar

The modelled radar is a copy of the FlightGear F-16 Flight Control Radar, because it is already nicely modelled and

the F-16 radar most probably is quite similar to the RDY-versions.

Note In reality the different versions of the Mirage 2000 have different radars and different radar modes, but this is not modelled.

3.2.1 Radar Range

The radar range can be increased by using `Key: R` - and decreased by using `Key: E`. Each key press is a factor 2 (e.g. from 20 nm to 40 nm)

For air-to-air combat the range is up to 160 nm (depending on the mode), for ground and sea modes it is up to 80 nm (for ground auto 40 nm).

When the radar mode changes (either by actively changing the radar mode or as a consequence of e.g. selecting a target), the range can change automatically.

3.2.2 Radar Modes

The radar has a set of modes and sub-modes (see the description in FlightGear F-16 Fire-Control Radar - bearing in mind that the displays are different in the M2000 and not all functionality is the same):

- **CRM**: Combined Radar Mode
  - RWS: Range while Search
  - TWS: Track while Search
  - LRS: Long Range Search
  - VS: Velocity Search
- **ACM**: Air combat Mode
  - ACM-20: 30 by 20 degrees HUD field of view
  - ACM-60: 10 by 60 degrees HUD field of view
  - ACM-BORE: boresight
- **SEA**: Sea Navigation
- **GM**: Ground Mapping
- **GMT**: Ground Moving Target

To change between main modes use `Key: Q` - to change between sub-modes use `Key: ctrl-q`.

3.2.3 Selecting Targets

When in TWS mode the next target can be selected using `Key: y` (can be used several times to cycle between targets). To deselect the current target use `Key: ctrl-y`.

In other modes use the arrows on your keyboard (`Key:` ⇐, ⇒, ⇑, ⇓) to move the cursor on the VTM. Use `Key: l` (small L) to designate a target. You can also bind the cursor movement to your joystick of throttle like the following example (for vertical you just use the `cursor-slew-y property`):

```
<axis>
    <name>Hat Switch Front Horizontal</name>
    <desc>Slew cursor left/right</desc>
    <number>
        <windows>6</windows>
    </number>
    <binding>
        <command>property-scale</command>
        <property>controls/displays/cursor-slew-x</property>
        <power>1</power>
    </binding>
</axis>
```

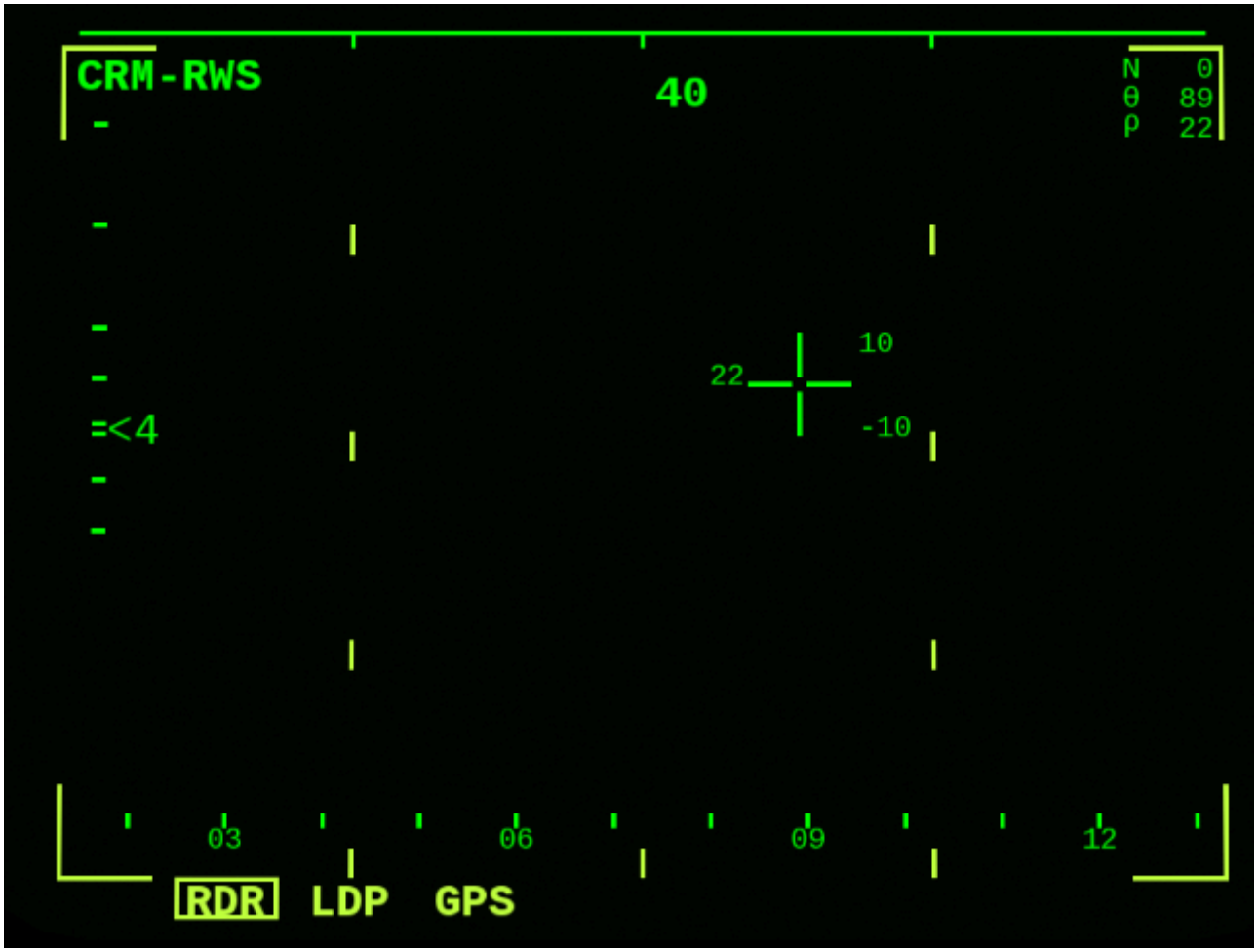
4 The Mirage 2000-5 Display Systems

The Mirage 2000-5 has its name from the fact that it has 5 main displays:

- Head-up display (HUD) - French Visualisation tête haute (VTH)
- Left and right Multi-function display (MFD)
- Head-level display - French Visualisation tête moyenne (VTM)
- Head-down display - French Visualisation tête basse (VTB)

4.1 VTM

This is a specialty of the Mirage 2000-5. Being positioned just below the HUD, this screen allows the pilot to see radar related information without moving the head. Like the HUD the VTM's focal point is perceived to be at infinity.



Most radar pictures are displayed in a B-scope (see picture above), the sea and ground radar modes are displayed as Plan Position Indicator - cf. Radar Displays on Wikipedia.

The top left corner shows the radar main mode (`Key: Q` to cycle) and the radar sub-mode (`Key: ctrl-q` to cycle). In the top middle the radar range in nm is displayed (`Key: R` to increase, `Key: E` to decrease). The box in the top right corner shows data from the cursor: Θ shows the the heading of the cursor, P shows the distance of the cursor on the radar.

The cursor can be moved with arrow keys on the keyboard or using a binding to a joystick. On the left side of the cursor the radar distance is shown, on the left side the top and bottom altitudes being scanned by the radar (in ft).

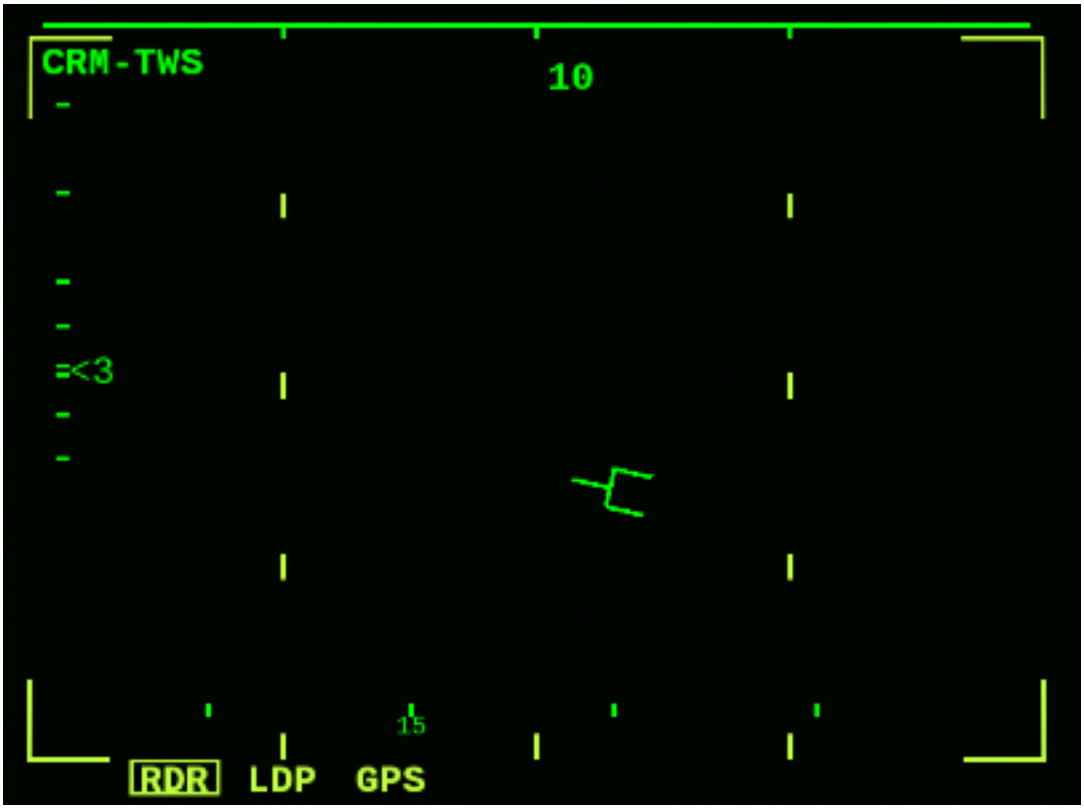
At the bottom of the screen there is a heading scale (showing true of magnetic North depending on the setting done on the VTB). At the bottom on the left the three main weapon guidance modes are displayed: radar (RDR), laser designa-

tion point (LDP), GPS. The currently used guidance mode is displayed inside a box and can be changed using `Key: M`.

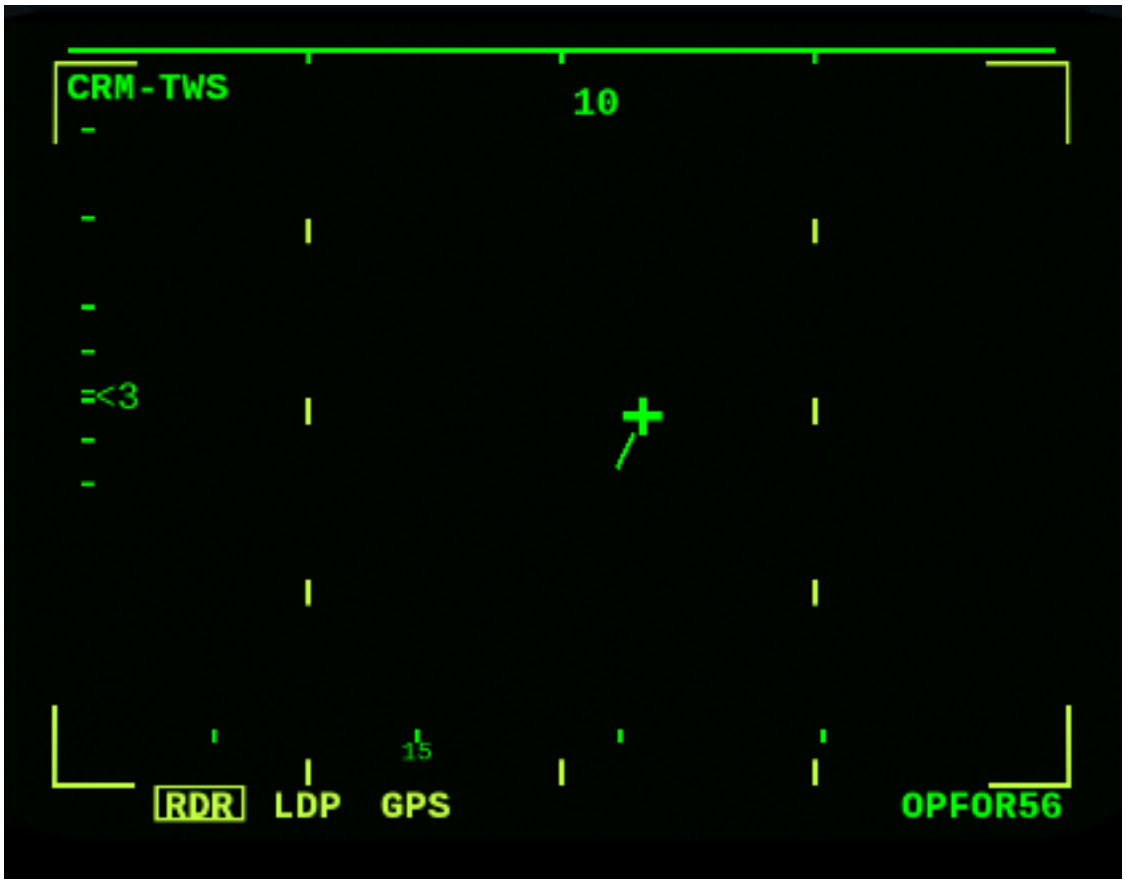
The scale on the left side shows the radar antenna elevation / radar pitch. The number shows the number of bars (vertical scanning of the radar). The antenna elevation can be changed (`Key: i` for up, `Key: I` (capital i) for down, `Key: Y` for level).

4.1.1 Air-to-Air

A flying target is shown as an open rectangle with a line showing the direction the target is flying at (the longer the line, the faster).



In TWS mode a target can be selected using `Key: y` (and deselected with `Key: ctrl-y`). When the target is selected, then the display is changed to a small cross (still with a line indicating the direction) and the targets identifier is displayed in the lower right corner.



To select a target in another air-2-air or air-2-ground or air-2-see mode, the cursor must be moved over the middle of the target and then designated using `Key: l` (small L).

4.1.2 Air-to-Sea

Like all ground modes the radar picture is displayed as PPI.

In air-2-sea mode the target is selected and designated using the cursor. A not designated target is shown as a diamond.

When selected the target is shown as a cross. There is no information about direction / speed displayed.

4.1.3 Air-to-Ground

The following picture shows a few targets in ground mode (like for sea targets they are displayed as diamonds). Notice that the antenna elevation has been lowered a few degrees (radar pitch scale at left side) and one of the targets (boxed) has been designated using the laser - and therefore the LDP guidance mode is highlighted.

4.2 Right MFD

4.2.1 Radar Warning Receiver (RWR)

On the right MFD when clicking left most button below the screen you can switch to the radar warning receiver (RWR) screen.

The screen is actually a combination of a RWR display and a counter-measures dispenser display.

The RWR displays a maximum of 12 threats. High level threats (e.g. with an STT lock or actively guiding a missile) are within the blue centre ring, lower level threats are closer to the outer ring. I.e. the distance from centre is an interpretation of threat and not a real distance. The position is a top-down view around your aircraft (nose towards up/North).

Different types of threats are displayed with different symbols according to USA/NATO standards (i.e. not according to French symbology at the moment). `U` is for unknown threat, `S` is for surveillance aircraft (e.g. AWACS - which typically cannot shoot), and `AI` is for aircraft which have not yet been classified in OPRF.

If there is a chevron below the symbol, then the threat has a radar lock on you. If there is a hat on top of the symbol, then the threat is either source to an active missile or guiding a semi-active missile. Only one missile in the air can be displayed - even though several might be in the air at the same time. The missile is shown with the symbol `W` close to the centre - again the distance is not the real distance and only the bearing relative to your aircraft is shown. If a missile is in the air, then the related threats are blinking once per second.

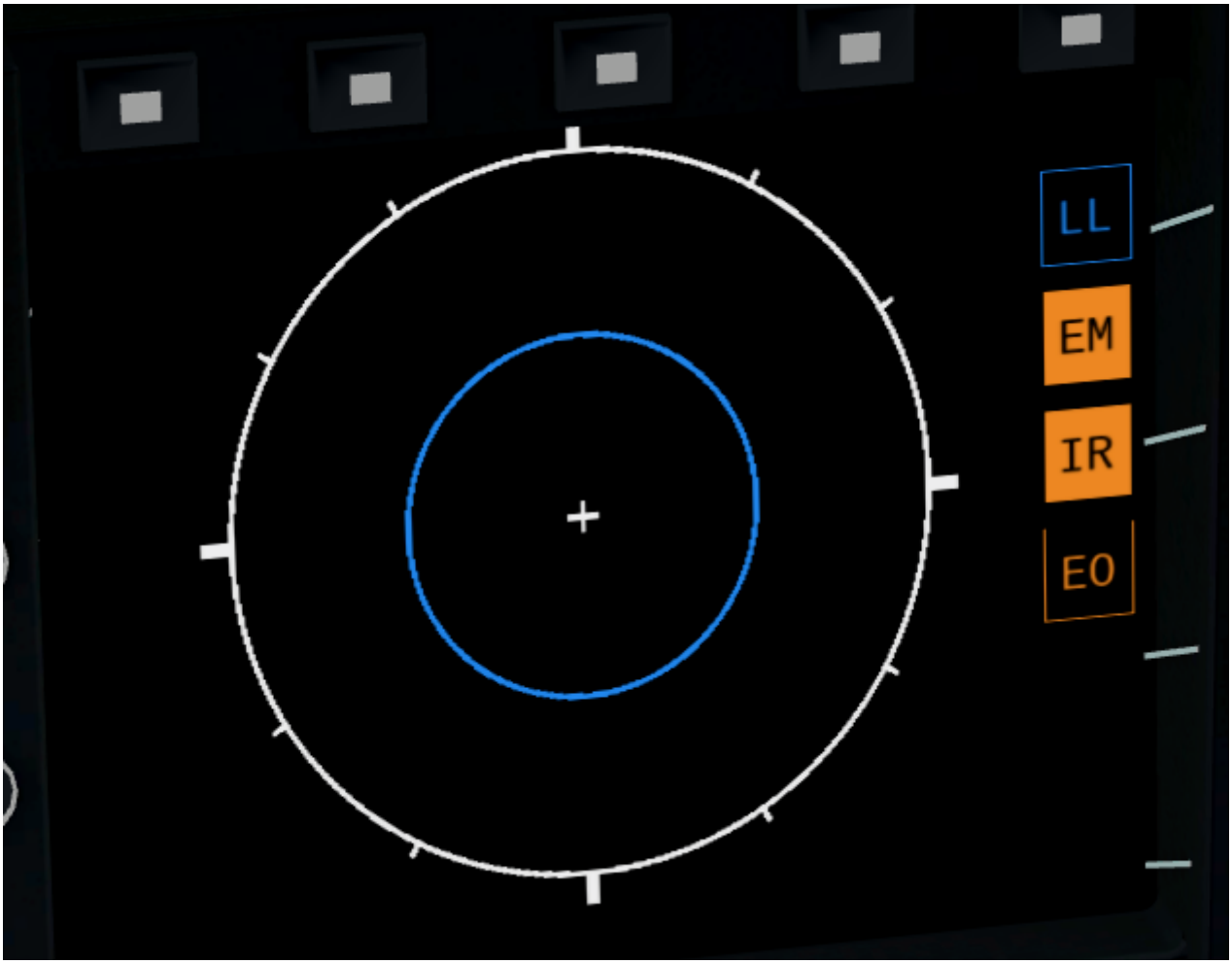
In addition to the visual indications there are sounds (refreshed every 0.5 seconds):

- A new threat has been detected: continuous 1 kHz tone for 0.5 seconds.

- A new radar lock (STT) has been detected: 1 kHz tone chopped at 25Hz for 0.5 seconds.
- A semi-active missile is being supported: 1 kHz tone chopped at 25Hz for 0.5 seconds repeating after 0.5 seconds of silence.
- An active radar missile is in the air: continuous 1 kHz tone chopped at 25Hz until the missile is not detected any more.

4.2.2 Counter-Measures Dispenser Display

At the right side of the RWR there are 4 indicators for dispensed counter-measures (flares and chaff). It is "could-be" interpretation of the decoy dispenser lights on the right top of the M2000-C canopy.



- `LL` = decoy dispenser (Lance-Leurres) - blue: blinks when counter-measures are being dispensed.
- `EM` = chaff (Électro-magnétique) - amber: blinks when remaining quantity is at or below 20. Steady light when remaining quantity is at 0 (empty).
- `IR` = flares (Infrarouges) - amber: blinks when remaining quantity is at or below 20. Steady light when remaining quantity is at 0 (empty).
- `EO` = electro-optical (Électro-optique) - amber: not simulated.

The total quantity of counter-measures simulated is 120. 2 are dispensed every second. No difference is made between flares and chaff in the simulation. Use `Key: q` to start dispensing and `Key: q` to stop dispensing.

5 Weapons

5.1 Ground and Sea Attack

5.1.1 Basic Keys

- `Key: m`: toggle master arm
- `Key: w`: cycle through weapons
- `Key: ctrl-w`: toggle between CCIP and CCRP
- `Key: :` (colon): toggle single or pair release of bombs (do not use with GBUs)
- `Key: ;` (semi-colon): cycle through the ripple number (number of bombs release per release between 1 and 8)
- `Key: _` (underscore): cycle through the distance between rippled release (steps of 5 metres)
- `Key: M`: cycle through weapon guidance modes (e.g. LDP for laser guided ammunition)

5.1.2 CCIP

A Constantly Computed Impact Point (CCIP) is in the Mirage shown as a line from the flight path indicator (top) to the impact point (bottom). When the impact point is just above the target, then you release the bomb(s). This shot will not have a good accuracy, because the airplane is slightly banked to the right - for a good shot the airplane should be horizontal.

If you use a standard [Mk82 bomb](https://en.wikipedia.org/wiki/Mark_82_bomb), then you need to start a steep dive (ca. 40 degs) from at least 10'000 ft to have enough time for aiming and for the bomb to get armed. Using the Snake-Eye retarding device (Mk82SE) you can fly pretty low without a deep dive - given enough speed.

5.1.3 CCRP

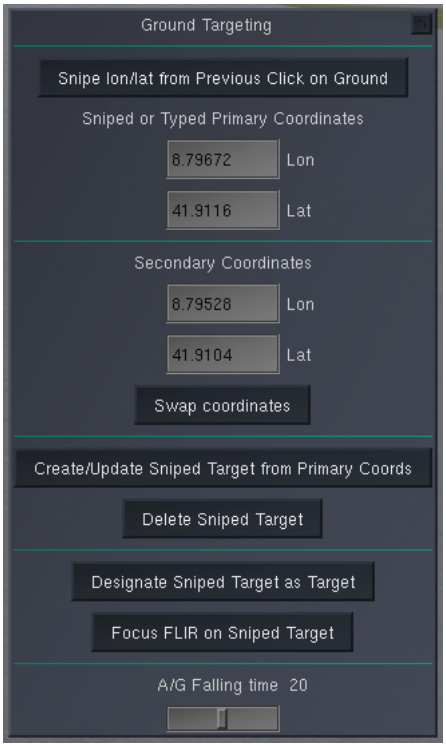
The Constantly Computed Release Point (CCRP) requires a target to have been designated - either with the cursor in ground attack radar mode or using a laser or GPS coordinates.

The following picture shows CCRP guidance for a laser guided GBU12 bomb a few seconds before the ideal release point. The diamond at the top shows with its wings that the pilot should navigate the airplane a bit to the right. The short horizontal line below the diamond gets closer from below the closer the release point is. On the right hand side the distance to the release point (not the target) is shown.

The next picture shows a similar situation, but this time the weapon is a dumb free-fall bomb and the target has been designated using the ground radar.

5.1.4 Laser or GPS Designation

In the `Mirage 2000` menu there is a menu point `Ground Targeting`, which will display the following dialogue:



It is important to do all steps sequentially!

You can acquire coordinates in two ways: either write the lon and lat directly into the fields - or click on the ground where you want to pick the coordinate and then press the top button (it will be disabled if no laser designation pod has been added to the airplane).

Always the primary coordinates will be used to create/update targets, but a secondary pair can be input as well. A button can swap the primary and secondary coordinates.

A sniped target (simulating what would be done with a laser) can be created with a button based on the primary coordinates. NB: the view can temporarily be changed automatically, such that the coordinate including its elevation above sea level can be fetched behind the scenes).

The target can then be designated using another button.

A FLIR view (`Key: F6`) can be activated and the button `Focus FLIR on Sniped Target` will then point the laser to the sniped coordinates. Thereby the coordinate can be improved by clicking exactly on the target through the FLIR and then updating the target.

6 References

This page contains a structured selection of references, which can or have been used for modelling this FlightGear Mirage 2000. In general it is rather hard to get good data and even pictures for modern French fighters.

6.1 Books

6.1.1 B01: Dassault Mirage: The Combat Log

Ref: Salvador Mafé Huertas, 1996; Schiffer Military History; ISBN: 0-7643-0168-3; 208 pages

Content:

- 16. 200: Picture of M2000-5 with all its weapons (picture by Dassault) - including amongst others the MATRA ARAMAT and rocket pods.

- 16. 205: Illustration of the (Mirage IIIE) Cyrano Ilbis radar air-to-ground sweep as well as the Cyrano Ilbis radar blind penetration mode.

- 16. 206: Illustration of Mirage IIIE level bombing and toss bombing.

6.1.2 B02: Dassault Mirage 2000: Flying in Air Forces around the World

Ref: Duke Hawkins, 2017?; HMH Publications; HMH-DH-003; ISBN: 978-2-9602488-2-1; 108 pages

Content:

- In general: High resolution and high detail photos of all parts for the Mirage - and all models.
- Very few cockpit pictures - and instruments are not turned on.
- Very few weapons pictures - and only a minor selection.

6.1.3 B03: 35 Years of Air Superiority

Ref: John Lekkas, 2023; Eagle Aviation; ISBN 978-618-85165-3-3; 124 pages

Content:

- In general: Tells the story (in Greek and English) of the Hellenic Air Force 331 squadron "Theseus" and their use of the Mirage 2000-5 Mk2.
- Quite a few high resolution cockpit and weapons pictures.
- Cockpit pictures: p. 9, 52 (not turned on)
- Instrument pictures: p. 25/81/88/89 (turned on - by night), p. 80 (turned on - by night backseat), p.88 (high resolution VTM)
- HUD pictures (guns against F-16): p. 1/5/43/102

6.1.4 B04: Mirage 2000-5: Groupe de chasse 1/2 Cigognes

Ref: Alexandre Paringaux, 2017: Zéphyr Editions; "5"; ISBN 978-2-36118-249-6; 179 pages

Content:

- HUD pictures: p. 7, 68 (simulator)
- VTB pictures: p. 68 (simulator)
- VTM pictures: p. 71 (plus all other instruments in high resolution - but probably simulator)
- Picture of leg tablet: p. 66/67

6.1.5 B05: Mirage 2000D: Escadron de Chasse 3/3 Ardennes

Ref: Alexandre Paringaux, 2013: Zéphyr Editions; "1"; ISBN 978-2-36118-122-2; 80 pages

Content:

- Picture of leg tablet: p. 57

6.1.6 B06: Dans le Repair du Mirage 2000D: Nancy-Ochey

Ref: Alexandre Paringaux, 2013; Zéphyr Editions; ISBN 978-2-36118-116-1; 144 pages

Content:

- A number of pictures of different weapon configurations - and some close-ups
- 16. 75: some instruments on the simulator consoles
- 16. 82: front cockpit by night with instruments running (in simulator)
- 16. 84: back cockpit by night with instruments running (in simulator)

- 16. 107: front cockpit of crashed plane

6.1.7 B07: Mirage 2000N: Escadron de Chasse 2/4 La Fayette

Ref: Alexandre Paringaux, 2016; Zéphyr Editions; “4”; ISBN 978-2-36118-211-3

Content:

- Many weapon configurations - also conventional weapons (p. 94 & 96/97 4 GBU-12)
- 16. 111: night illuminated front cockpit with working VTB (in simulator)
- 16. 62: picture of leg tablet

6.1.8 B08: Les Forces Aériennes Stratégiques: 50 ans d’alerte nucléaire

Ref: Alexandre Paringaux, 2015; Zéphyr Editions; “3”; ISBN 978-2-36118-168-0

Content:

- 16. 4: picture of front cockpit 2000N by night illuminated (simulator)

6.1.9 B09: AMD-BA Mirage 2000D

Ref: Frédéric Lert; Les Matériels de l’Armée de l’Air et de l’Aéronaval; Histoire & Collections; ISBN 978-2-35250-253-1

6.2 Articles

6.2.1 Jets - L’aéronautique à réaction et son histoire

No 23, November 1997

A01: Riccardo Niccoli: En vol sur Mirage 2000-5 (4 pages)

- 16. 7: cockpit view of the front panel. Shows amongst others the 4 stripes indication of not working screens and the possibility to repeat the VTM radar screen on the VTB. And good view on the lower left panel with the 3*6 button table. The buttons are blue when illuminated, but not much.

6.2.2 World Air Power Journal

Volume 10 Autumn/Fall 1992

A02: Paul Jackson, Dassault Mirage 2000 (46 pages)

- Detailed description with lots of pictures of all current at that time variants and all user countries.
- Quite a few pictures of weapons - some of which are not used any more.
- p.60: instruments view of M-2000C and M-2000-5 (not very good resolution).

6.2.3 Nouvelle Revue d’Aeronautique et d’Astronautique

No. 2, 1997

A03: Georges Mas, Marc Pagliardini: Le Programme Radar RDY

Retrieved as “The RDY Radar Program” translation for requester NAIC/TAEA (National Air Intelligence Center), document control number: NAIC-98-0124, translation number: NAIC-ID(RD)T-0124-98 from internet.

6.2.4 Dassault Aviation - Engage!

Special Issue

A04: Mirage 2000-9

Download link

2 - 2003

A05: RDY2 multi role, multi function radar
A06: M53-P3 a new engine under the skin

6.3 Links

- Armée de l'Air et de l'Éspace:
  - Mirage 2000D: https://www.defense.gouv.fr/air/nos-aeronefs/nos-avions/mirage-2000
  - Mirage 2000-5F: https://www.defense.gouv.fr/air/nos-aeronefs/nos-avions/mirage-2000-5f
  - Air Actualités: https://www.calameo.com/accounts/14334
  - YouTube channel: https://www.youtube.com/channel/UC9tdrNLs9QpsFZI050UARkQ
  - Escadron de Chasse 1/2 "Cigognes": https://www.gc1-2cigognes.fr/
  - Wikipedia FR: Liste des escadres AdlA
- Dassault:
  - Mirage 2000
- Others:
  - Forum thread: Mirage 2000 RDM/RDI/RDY Radars and other avionics
  - Blog post: quite a few details on systems and weapons with pictures

6.4 DVDs

6.4.1 D01: Mirage 2000 - 20 Years in Hellenic Air Force Service

Ref: www.11aviation.com; 87 minutes; Greek language / no subtitles

Content:

- File 05-3
  - 21:05 minutes: HUD on ground
- File 05-4
  - 2:33 min: HUD on ground/take-off
  - 5:13 - 07:50: (ditto)
  - 10:00: HUD landing
  - 11:00: HUD with seeker

6.4.2 D02: Mirage 2000-5

Ref: Hellenic Air Force Yearbook; Airutopia, David Maxwell; 2012 Special Projects; ca. 1 hour; mostly English with Greek subtitles.

Content:

- File 01_1:
  - 5:58: Roll-rate = 270 degs / second
  - 7:09: HUD
  - 27:45/28:21/20:03-29:24: target in HUD
- File 01_2:
  - 16:20: startup with engine gauge instrument
  - 18:00: weapons page display
  - 19:14: attitude page display
  - 19:21: VTB tactical display
  - 19:30: Navigation page display
- File 01_3:
  - 10:01 / 11:04: Backseater HUD

6.5 YouTube Videos

6.5.1 Mirage 2000 Planète Science

URL: https://www.youtube.com/watch?v=MoVsmaIs_pU

Content:

- At around 9 minutes for ca. 2 minutes: live images of the 5 screens

6.5.2 DGA : Le Mirage 2000B qui se prenait pour un Rafale

URL: https://www.youtube.com/watch?v=a5ZwYXixT28

Content:

- At around 6 minutes for ca. 1 minutes (and also before and after) close-up pictures of the CC422 gun-pod

6.5.3 Le Mirage 2000 - Documentaire sur l'aviation

URL: https://www.youtube.com/watch?v=jDCxWEynbu4

Content:

- At around 21:30 for ca. 15 seconds live pictures left MFD (in simulator)

6.5.4 AB Moteurs Mirage 2000

URL: https://www.youtube.com/watch?v=bFHF9j_LvPk

Content:

- From around 29-41 minutes (with interruptions): walk-through of the cockpit, which gives a good insight into the French terms used.
- Some live footage of HUD here and there.

- genindex
- modindex
- search

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