TMS, DMS and CMS Usage Guide for Falcon BMS 4.38.1

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Chapter 1

Introduction

This document is a community-made reference guide for Falcon BMS 4.38.1, focused on practical use of three specific HOTAS controls: the Target Management Switch (TMS), the Display Management Switch (DMS), and the Countermeasures Management Switch (CMS). Although this guide was developed under Falcon BMS 4.38.1, the fundamental behavior of these switches has remained constant since at least Falcon BMS 4.36, making this guide applicable to almost any player of Falcon BMS. Although other controls exist on the F-16 throttle and stick—such as the Communication Switch, the Dogfight/MRM Override, and the RDR Cursor Enable control—they are mentioned only when essential to understanding the behavior and context of TMS, DMS, and CMS.[1] Its goal is to reorganize information that is spread across the Dash-1, Dash-34 and the BMS Training Manual into mode-based tables and short explanations, so that virtual pilots can quickly understand what each switch press does in a given context.[2]

This is the *TMS, DMS and CMS Usage Guide – Version 0.1.4.0+20260107*, prepared between 05 January 2026 and DD MMM 2026, and created with extensive assistance from an AI language model (Perplexity AI) to help structure, cross-reference and format the material. The human author remains fully responsible for every choice of content, interpretation and final wording, and any mistakes or omissions are attributable to the author alone, not to the AI system.

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The structure of the document mirrors the way BMS itself presents the jet: it starts with

[1] Falcon BMS core avionics and weapons behaviour are documented in Dash-1, section 2 and Dash-34, section 2. BMS Training Manual 4.38.1 describes how these systems are trained in practice.

[2] See Dash-34, section 2.1.5 (Hands-On Controls) and the foreword of BMS Training Manual 4.38.1 for the role of TMS, DMS and CMS in BMS training.

[3] Compare the official disclaimer and copyright statements in the foreword of BMS Training Manual 4.38.1.

general HOTAS concepts (TMS, DMS, CMS and related switches), then covers Air-to-Air radar and IFF usage, followed by Air-to-Ground sensors and SPI logic, and finally weapon-specific employment (Maverick, IAMs, LGBs, HARM, Harpoon, SPICE and others), with variant notes for different F-16 blocks and export models.[4] Each section includes cross-references to the relevant chapters of the official BMS manuals and, where applicable, to specific BMS training missions that let you practice the techniques described.[5]

1.1 Development timeline and status

This guide was developed in structured phases, beginning 05 January 2026. Current development status and targets are shown in Table 1.1 below.

Metric	**Current**	**Target**
Start Date	05 January 2026	—
Current Version	0.1.4.0+20260107	—
Chapters Complete	1/7	7/7
Tables Filled	0%	100%

The development roadmap is structured in three phases: (1) *Chapter scaffolding* (Versions 0.1.0–0.7.0), during which all chapters receive narrative content and table structures; (2) *Table population* (Versions 1.0.0–1.0.5), during which all tables are filled with complete HOTAS behavior descriptions and diagrams are generated; and (3) *Review and release* (Versions 2.0.0-RC1 through 2.0.0-Stable), during which content is reviewed for accuracy, consistency, and clarity. Each phase produces a versioned PDF artifact, and all versions are archived for traceability.

1.2 Scope and purpose

This guide focuses exclusively on three HOTAS switches: the Target Management Switch (TMS), the Display Management Switch (DMS), and the Countermeasures Management Switch (CMS). Although other controls exist on the F-16 throttle and stick—such as the Communication Switch, the Dogfight/MRM Override, and the RDR Cursor Enable control, and others—they are mentioned only when essential to understanding the behavior and context of TMS, DMS, and CMS.

This is not a comprehensive HOTAS or avionics manual. Instead, it is a usage guide organized by context, with emphasis on practical tables that show what each switch input does in specific flight modes, sensor configurations, and weapon employment scenarios. The guide bridges information scattered across official documentation and training missions, making it immediately accessible to pilots who ask: *"In this radar mode, what does TMS Up do?"* or *"How do I cycle through MFD formats with the DMS?"*

[4] See the organization of Dash-34, section 2 and the weapon employment sections of BMS Training Manual 4.38.1.

[5] Training missions and their learning objectives are listed in the table of contents of BMS Training Manual 4.38.1.

The guide assumes knowledge of basic F-16 operation and familiarity with master modes (NAV, A-A, A-G, DGFT). It does not replace the Dash-34 or Training Manual; rather, it complements them by organizing TMS/DMS/CMS behavior into searchable tables with cross-references back to official sources and practical training missions where each behavior can be practiced.

1.3 Version, authorship and AI assistance

Document Version: 0.1.4.0+20260107 (Progress: Chapters 1/7 | Tables 0%)

Falcon BMS Version: 4.38.1 (Update 1)

Authorship: This guide was created by a member of the Falcon BMS community with structured assistance from AI language models (Perplexity AI). The human author identified scope, validated content against official Falcon BMS documentation, made all organizational and editorial decisions, and bears full responsibility for the guide's accuracy and presentation. AI tools were used for research organization, cross-referencing, and text generation—not for defining technical correctness.

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1.4 Sources and references

This guide is based on the following primary Falcon BMS documents consulted during research and development:

1. **TO BMS 1F-16CMAM-34-1-1** (Dash-34, Change 4.38) – Avionics and Nonnuclear Weapons Delivery Flight Manual
    - Sections 2.1.5 (HOTAS Hands-On Controls)
    - Sections 2.3.1 (ANAPG-68V5 Fire Control Radar)
    - Section 2.7 (Defensive Avionics – CMS, ECM, CMDS)
    - Weapon-specific chapters (HARM, Maverick, IAMs, LGBs, Harpoon, SPICE, etc.)
2. **BMS Training Manual 4.38.1** (October 2025) – Training missions and learning objectives
    - Individual mission descriptions (TRN 11–28, with emphasis on weapons employment and avionics training)
    - Mission learning objectives and practical procedures

3. **TO BMS 1F-16CMAM-1** (Dash-1) – F-16 Aircraft Systems, Normal and Abnormal Procedures
    - Referenced for overall aircraft context and system interactions
4. **BMS User Manual 4.38** – BMS user interface and setup
    - Referenced for MFD, ICP, and UFC control information
5. **MCH 11-F16 Vol 5** (May 1996) – F-16 Flight Manual Vol 5 (Surface Attack and Weapons Delivery)
    - Referenced for operational context and ordnance procedures
6. **Falcon BMS Cockpit Arrangement Diagrams** (Multiple blocks)
    - F-16C Block 50/52, Block 40/42, Block 30/32, F-16A MLU variants
    - Visual reference for HOTAS switch positions across variants

Note: This reference list will be updated throughout the development of the guide as new sources are consulted. Always refer to the most current version of this document to see the complete list of references.

1.5 Document structure and how to read it

1.5.1 Part A: Foundational Chapters (2–3)

Chapter 2 establishes core HOTAS concepts: Sensor of Interest (SOI), short vs. long press timing, master modes, and an overview of TMS/DMS/CMS roles. Read this first if you are new to the F-16 or HOTAS in general.

1.5.2 Part B: Switch-Specific Chapters (3–5)

Chapters 3, 4, and 5 each focus on one switch and contain detailed tables using the `hotastable` environment.

Table structure

Each table follows a seven-column format:

State	Dir	Act	Function	Effect / Nuance	Dash34	Train
Condition	Up	Shrt	Name	Explanation	Ref	TRN

How to find information

1. Identify the **master mode and sensor/weapon context** from the section title (e.g., "TMS in Air-to-Air – FCR CRM").
2. Find the **State** within the table (e.g., "Search" vs. "STT").
3. Determine the **Direction** and **Action** (Short/Long).
4. Read the **Effect** and check the **Dash34** or **Training** reference.

1.5.3 Part C: Training and Visual Reference (Chapters 6–7)

Chapter 6 links this guide to the 33 BMS training missions, offering a recommended progression and example tactical flows. Use this chapter to plan your training sequence.

Chapter 7 provides schematic diagrams of the TMS, DMS, and CMS hats with arrows and short labels for each direction in common contexts. These are quick-reference visuals; always consult the tables for complete behavior descriptions.

1.5.4 Part D: Appendices

Appendix A notes any differences in TMS/DMS/CMS behavior across F-16 blocks and variants (e.g., Block 50/52 vs. Block 40/42).

Appendix B provides a comprehensive index of all major tables and their locations.

Chapter 2

HOTAS fundamentals

2.1 Sensor of Interest (SOI) and display logic

2.2 Short vs long presses and timing

2.3 Master modes and context-sensitive behaviour

2.4 Overview of TMS, DMS and CMS

Chapter 3

TMS – Target Management Switch

3.1 Concept and general behaviour

3.2 TMS and Situational Awareness displays

3.2.1 HSD: Cursor control and waypoint management

3.2.2 Integration with NAV master mode

3.2.3 Cross-mode SA display interaction

3.3 TMS in Air-to-Air

3.3.1 FCR CRM (RWS / ULS / VSR)

3.3.2 SAM / DT-SAM

3.3.3 TWS

3.3.4 STT

3.3.5 ACM (30x20, 10x60, BORE, SLEW)

3.3.6 IFF interrogations (SCAN / LOS)

3.4 TMS in Air-to-Ground – sensors and SPI

3.4.1 FCR A-G (GM / GMT / SEA / AGR)

3.4.2 TGP A-G

3.4.3 HUD / HMCS (SPI, Snowplow, CZ, VIP/VRP cues)

3.4.4 Markpoints and steerpoint management

3.5 TMS in A-G weapon employment

3.5.1 Unguided bombs and rockets (CCIP / CCRP / DTOS)

3.5.2 EO weapons – Maverick (VIS / PRE / BORE)

3.5.3 IAMs (JDAM / JSOW / WCMD / SPICE / others)

3.5.4 LGBs and laser employment

Chapter 4

DMS – Display Management Switch

4.1 Concept and Sensor of Interest (SOI)

4.1.1 SOI definition and scope across displays

4.1.2 Role of the DMS in SOI selection

4.1.3 Example SOI flow (overview)

4.2 DMS in MFDS format selection and SWAP

4.2.1 MFDS format selection and cycling

4.2.2 SWAP and display management

4.2.3 HSD control via SOI and MFDS functions

4.3 DMS in sensor and weapon context

4.3.1 SOI changes between FCR, TGP, HSD and HUD in Air-to-Air

4.3.2 SOI changes between FCR, TGP, HSD, HAD and WPN in Air-to-Ground

4.3.3 DMS with HARM – HAD page as SOI

4.3.4 DMS with IAMs and other weapon-driven MFDS pages (SMS/WPN)

4.4 DMS – Block / variant notes

Chapter 5

CMS – Countermeasures Management Switch

5.1 Concept and interaction with CMDS / ECM

5.2 CMS Actuation (all modes)

5.3 CMS – Block and variant notes

Chapter 6

Training references and practical flows

6.1 How to use this guide with BMS training missions

6.2 Recommended progression

6.3 Example flows for typical missions

6.4 Checklist: what to practice next

Chapter 7

HOTAS visual reference

7.1 F-16 HOTAS overview

7.2 TMS diagrams

7.3 DMS diagrams

7.4 CMS diagrams

Appendix A

Block / variant overview

A.1 F-16CM Block 50/52

A.2 F-16C/D Block 40/42

A.3 F-16AM/BM MLU

A.4 F-16I Sufa and Israeli variants

A.5 Other export variants

Appendix B

Tables index

B.1 TMS tables

B.2 DMS tables

B.3 CMS tables