



BMW F CHASSIS

GEN2 FORMULA LINE RACING STEERING WHEEL SYSTEM

INFORMATION PACKET

SYSTEM ARCHITECTURE / PROGRAMMING / FUNCTION LIBRARY / FITMENT

DOCUMENT SCOPE

This packet documents the BMW F Chassis Formula Line platform, supported applications, MadtraceLAB profile structure, and supplied 45-function library. Actual behavior depends on the exact chassis, market, transmission, factory steering-wheel equipment, coding, installed options, and software configuration.



FORMULA LINE WITH STANDARD OLED DID + REVLEDS

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WHERE THE FORMULA LINE FITS

PRODUCT LINE POSITIONING

- Clubsport Line is the streamlined GEN2 entry platform, retaining programmable factory steering-wheel functions, RGB lighting, MadtraceLAB, and multi-profile storage.
- PODIUM Line adds RevLED, center-console commands, advanced race controls, rear profile quick switching, and optional multi-paddle configurations while preserving round-wheel adapter flexibility.
- Formula Line combines the high-level GEN2 electronics with a purpose-designed 290 mm GT wheel. RevLED, the OLED Driver Information Display, and two programmable magnetic paddles are integrated as standard equipment.
- GEN1 is the legacy fixed-layout platform and does not include MadtraceLAB programming, RGB customization, RevLED, or multi-profile operation.

LINE	PRIMARY POSITION	KEY DIFFERENCE
Clubsport	GEN2 entry platform	Core factory functions and programmable controls; no RevLED or advanced race controls.
PODIUM	Expanded GEN2 platform	RevLED, center-console and race controls, profile switching, and optional paddle expansion.
FORMULA	Dedicated 290 mm GT wheel	RevLED, OLED DID, and two programmable magnetic paddles are standard.
GEN1	Legacy platform	Fixed layout; no MadtraceLAB, RGB customization, multi-profile operation, or RevLED.

FORMULA LINE TAKEAWAY

FORMULA combines Podium-level electronic control with a dedicated 290 mm GT wheel, standard OLED DID, RevLEDs, and integrated magnetic paddles.

PRODUCT LINE COMPARISON: CORE PLATFORM

FEATURE	CLUBSPORT	PODIUM	FORMULA	GEN1
Factory steering-wheel functions	Standard	Standard	Standard	Standard
Completely plug and play	Standard	Standard	Standard	Standard
Programmable button layout	Standard	Standard	Standard	Fixed layout
RGB customizable button colors	Standard	Standard	Standard	Not equipped
MadtraceLAB	Standard	Standard	Standard	Not equipped
OLED Driver Information Display (DID)	Optional	Optional	Standard	Not equipped
Single magnetic paddle shifter	Optional for AT	Optional for AT	Standard	Optional for AT

HOW TO READ THE TABLE

Standard = included in the line architecture. Optional items depend on vehicle, transmission, and ordered configuration. AT = automatic transmission.

PRODUCT LINE COMPARISON: RACE CONTROLS + ADAPTERS

FEATURE	CLUBSPORT	PODIUM	FORMULA	GEN1
Two programmable magnetic paddles	Not equipped	Optional	Standard	Not equipped
RevLED CAN bus shift lights	Not equipped	Standard	Standard	Not equipped
Center-console functions	Not equipped	Standard	Standard	Not equipped
Advanced race controls	Not equipped	Standard	Standard	Not equipped
Multi-profile settings	Standard	Standard	Standard	Not equipped
Rear button profile quick switch	Not equipped	Standard	Standard	Not equipped
6×70 mm MOMO original horn-cap adapter	Optional	Optional	Not equipped	Optional
6×74 mm NARDI-type steering-wheel adapter	Optional	Optional	Not equipped	Optional

WHY FORMULA STANDS APART

FORMULA matches PODIUM's advanced control capability in a purpose-built GT wheel, with the OLED DID, RevLEDs, and magnetic paddles included as standard equipment.

EXECUTIVE SUMMARY

- The JQ Werks Madtrace GEN2 FORMULA Line is a purpose-designed 290 mm racing steering wheel system inspired by GT3 and GT4 endurance-racing ergonomics.
- For supported BMW F Chassis applications, the control hub integrates CAN bus and LIN bus communication so factory steering-wheel functions and expanded vehicle controls can be operated from the wheel.
- A dedicated harness, CAN integration module, adapter hub, and quick-release base with integrated chassis PCB create a plug-and-play, vehicle-specific installation without wire splicing.
- Front-facing buttons, joystick-style rotary controls, dedicated rotary controls, and two programmable magnetic paddles can be assigned through MadtraceLAB to supported steering-wheel, car-control, and general commands.
- Three complete profiles can be stored in the hub, each with an independent button map and lighting configuration, and recalled through an assigned profile quick-switch input.
- RevLED CAN bus shift lights, the OLED Driver Information Display, and two programmable magnetic paddle inputs are integrated as standard Formula Line equipment.
- The system removes the factory steering wheel and airbag and is intended exclusively for off-road, track, racing, and competition use.

FUNCTION AVAILABILITY

Slides 15–18 document the complete 45-command BMW F Chassis MadtraceLAB function library. Exact availability depends on chassis, market, transmission, factory equipment, coding, and selected software profile.

MECHANICAL CONSTRUCTION

FORMULA LINE HARDWARE

- The purpose-designed 290 mm Formula wheel housing is precision machined from 6061-T6 billet aluminum for accurate geometry, consistent alignment, and a premium finished surface.
- Smooth, high-grip rubber is applied to the handgrip areas to support secure control and endurance-racing ergonomics.
- Black and red anodized finishes define the Formula Line visual treatment and coordinate with the matching adapter hub and quick-release assembly.
- The quick release is manufactured from 7075-T6 billet aluminum for strength, durability, and a precise mechanical fit.
- Front-facing buttons, joystick-style and dedicated rotary controls, RevLED shift lights, the OLED DID, and two programmable paddle inputs keep critical functions within reach.
- The integrated design eliminates the need for a separate round steering-wheel rim, horn-cap adapter, or NARDI/MOMO steering-wheel adapter.



CONFIGURATION SHOWN

Official Formula configuration shown with the integrated OLED DID, RevLED shift lights, and two programmable magnetic paddle inputs.

VEHICLE INTEGRATION: CAN + LIN

- BMW F Chassis steering-wheel, drivetrain, iDrive, lighting, and wiper commands are distributed across the vehicle's electronic networks. The FORMULA Line interfaces with supported data through vehicle-specific CAN + LIN integration hardware.
- CAN communication supports compatible factory data and commands, including RevLED RPM input, steering-wheel controls, cruise or ACC functions, M or drive-mode controls, and the vehicle functions exposed by the selected BMW F profile.
- LIN communication supports compatible factory steering-wheel electronics where required by the configured application.
- A dedicated BMW F harness and CAN integration module connect the system without cutting or splicing factory wiring.
- The supplied library includes 45 commands. M1/M2, ACC, adaptive suspension, Drivelogic, and related functions require the corresponding vehicle, option equipment, coding, and software configuration.
- See pages 14–18 for the Formula paddle architecture and complete BMW F function tables.

MADTRACELAB 2.0

MadtraceLAB is the configuration and update platform for the GEN2 Formula control hub.

The Function workspace displays the steering wheel graphic, available input locations, selected vehicle vendor, function categories, and active profile.

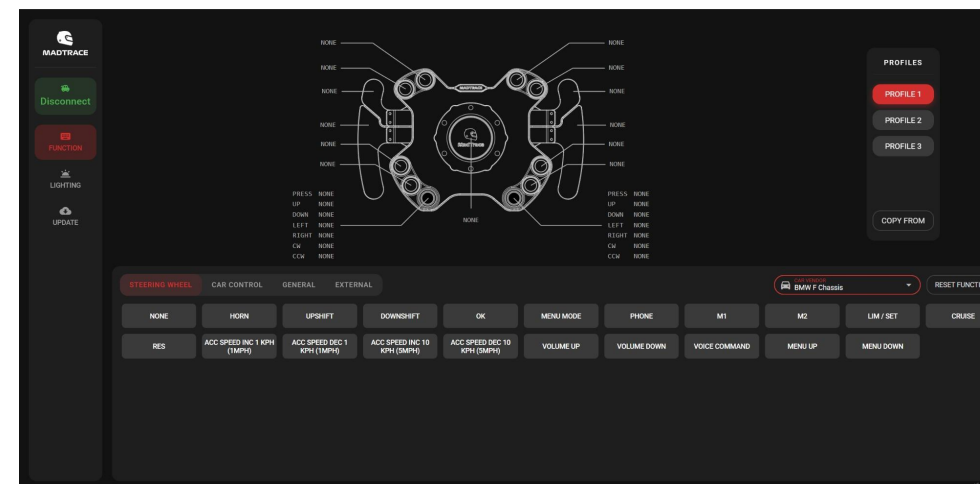
A user can select an input and assign a supported command from the Steering Wheel, Car Control, General, or available External category.

Lighting settings control button illumination and RevLED behavior for visibility, recognition, and driver preference.

The Update section manages compatible software and feature updates through the hub's discreet USB-C service connection.

“Copy From” can transfer an existing layout into another profile before profile-specific changes are made.

MADTRACELAB FUNCTION WORKSPACE



SCREENSHOT CONTEXT

Software reference for the BMW F Chassis vendor profile. Confirm the exact chassis, M or non-M steering-wheel configuration, transmission, factory options, coding, and software profile before mapping or copying a layout.

MULTI-PROFILE SETTINGS + QUICK SWITCH

- Up to three complete profiles can be stored directly in the Formula hub's internal memory.
- Each profile can contain independent button assignments, paddle assignments, and illumination settings.
- A race profile can prioritize shifting, M or drive-mode controls, stability, suspension, and the commands verified for the vehicle.
- A road or media profile can group cruise, ACC, volume, voice, phone, menu, and iDrive functions.
- A third profile can support endurance use, a second driver, a different operating condition, or a second compatible BMW F vehicle after full verification.
- Assign a profile quick-switch input for rapid access, and use the standard OLED DID or MadtraceLAB to review and manage the active mapping.

STORED PROFILE	SUGGESTED USE	WHAT IS RETAINED
Profile 1	Race baseline	Verified essential commands + lighting
Profile 2	Road / media / iDrive	Independent functions + lighting
Profile 3	Endurance / secondary driver	Independent functions + lighting

CONTROL INPUT ARCHITECTURE

FRONT-FACING CONTROLS

- Front-facing push buttons provide direct access to frequently used mapped functions.
- Two joystick-style rotary controls expand the input count with Press, Up, Down, Left, Right, Clockwise, and Counterclockwise actions when enabled.
- Dedicated rotary controls can support Clockwise and Counterclockwise assignments where enabled.
- Two magnetic paddle inputs are integrated and can be assigned to shifting, turn signals, wipers, or other supported commands.
- A profile-selection input can switch among the three saved maps and their independent lighting configurations.
- M1 and M2 should only be assigned on supported BMW M applications equipped and configured for those commands.

INPUT GROUP	AVAILABLE ACTIONS	TYPICAL BMW F ASSIGNMENT
Front buttons	Push inputs	Horn, OK, phone, M1/M2, cruise
Left joystick	Press / U / D / L / R / CW / CCW	Menu, media, navigation
Right joystick	Press / U / D / L / R / CW / CCW	Cruise, ACC, menu
Dedicated rotary controls	CW / CCW	Function navigation or driver preference
Magnetic paddles	4 programmable inputs	Shift, signals, flash, wiper
Profile selection	Assigned quick-switch input	Profile 1 / 2 / 3

HUMAN-FACTORS NOTE

Place functions where they can be identified and operated without the driver looking away from the track. Keep critical commands consistent across profiles.

REVLED SHIFT LIGHT + ILLUMINATION

RevLED CAN bus shift lights are standard equipment on the FORMULA Line control hub.

In MadtraceLAB 2.0, the user can set the RPM threshold at which the shift-light sequence begins and the redline alert flashes.

Engine-speed data is received through the vehicle communication system so the sequence can respond to the supported RPM signal.

The LEDs progress through the configured sequence, and all lights flash at the programmed redline condition.

Button illumination colors can be customized so groups of controls are easier to recognize during a driving session.

Different profiles may use different lighting schemes, providing visual confirmation of the active button map.

The standard OLED DID provides direct adjustment of display brightness, RGB button colors and mapping functions of the hub, while complete programming remains available through MadtraceLAB.

Review redline and illumination settings whenever the hub is moved to another compatible vehicle or the engine calibration changes.

CONFIGURATION RESPONSIBILITY

Shift lights are a driver aid, not a substitute for the vehicle's engine-protection strategy. Match the visual redline to the verified engine setup.

OLED DRIVER INFORMATION DISPLAY

Every FORMULA Line racing steering wheel includes an OLED Driver Information Display positioned directly beneath the RevLED shift lights.

Through the integrated CAN bus connection, the DID can display supported real-time telemetry such as vehicle speed.

The display provides direct access to button-layout mapping and profile selection without reconnecting the hub to a computer.

Display brightness and RGB button illumination can be adjusted from the DID interface.

Available telemetry channels depend on the selected vehicle and software configuration.

Test the vehicle after any on-wheel mapping change, even when the DID confirms that the assignment was saved.

DID CAPABILITIES

CAPABILITY	STATUS
Real-time speed	Supported telemetry
Button mapping	Direct control
Profile switching	Direct control
Display brightness	Adjustable
RGB button colors	Adjustable
Computer connection	Not required for DID changes

STANDARD EQUIPMENT

The OLED DID is integrated into every Formula Line wheel and is included as standard equipment.

MAGNETIC PADDLE SHIFTERS

- The FORMULA Line includes two motorsport-grade magnetic paddles made from 6061-T6 billet aluminum.
- All two paddle inputs are integrated into the purpose-built wheel architecture and included as standard equipment.
- Every paddle is programmable, allowing each input to control any supported function—not only shifting.
- A common automatic-transmission layout uses one pair for upshift and downshift and the second pair for signals, flash, wiper, or other verified commands.
- Manual-transmission BMW F applications can use the paddles for non-shifting functions when supported by the selected vehicle profile.
- Paddle assignments can be stored independently in each of the three profiles.
- Verify every assignment with the vehicle stationary before track use.

MAPPING SAFETY

Program only functions that can be safely operated from a paddle. Avoid assignments that could cause an unintended vehicle-state change during steering input.

STEERING WHEEL FUNCTIONS: CORE + MEDIA

MADTRACELAB FUNCTION	COMMAND PURPOSE	CONFIGURATION NOTE
NONE	Leaves the selected input unassigned.	Use for unused or reserve inputs.
HORN	Activates the supported horn command.	Verify stationary before use.
UPSHIFT	Requests an upshift on supported configurations.	Transmission dependent.
DOWNSHIFT	Requests a downshift on supported configurations.	Transmission dependent.
OK	Confirms the highlighted supported menu item.	Factory display dependent.
MENU MODE	Opens or changes the supported cluster or menu mode.	Factory equipment dependent.
PHONE	Activates the supported phone command.	Infotainment dependent.
M1	Recalls the supported BMW M1 driver preset.	M applications with M1 only.
M2	Recalls the supported BMW M2 driver preset.	M applications with M2 only.
VOLUME UP	Raises supported audio volume.	Factory audio dependent.
VOLUME DOWN	Lowers supported audio volume.	Factory audio dependent.
VOICE COMMAND	Activates the supported factory voice function.	Infotainment dependent.

VERIFICATION

Test every assignment with the vehicle stationary and the correct BMW F Chassis profile selected.

STEERING WHEEL FUNCTIONS: CRUISE + MENU

MADTRACELAB FUNCTION	COMMAND PURPOSE
LIM / SET	Selects the supported speed limiter or stores a cruise setting, depending on configuration.
CRUISE	Activates the supported cruise-control mode.
RES	Resumes the stored supported cruise setting.
ACC SPEED INC 1 KPH (1MPH)	Increases the supported adaptive-cruise target by one step.
ACC SPEED DEC 1 KPH (1MPH)	Decreases the supported adaptive-cruise target by one step.
ACC SPEED INC 10 KPH (5MPH)	Increases the supported adaptive-cruise target by the larger step.
ACC SPEED DEC 10 KPH (5MPH)	Decreases the supported adaptive-cruise target by the larger step.
MENU UP	Moves upward in a supported menu.
MENU DOWN	Moves downward in a supported menu.

REGIONAL + EQUIPMENT DEPENDENCY

Cruise, limiter, and ACC functions require the corresponding factory equipment, regional configuration, coding, and selected BMW F profile.

CAR CONTROL FUNCTIONS

MADTRACELAB FUNCTION	COMMAND PURPOSE
M MODE	Activates the supported BMW M Mode command.
SPORT MODE	Selects the supported Sport driving mode.
ECO PRO	Selects the supported Eco Pro driving mode.
SUSPENSION MODE	Changes the supported adaptive-suspension setting.
ESP	Activates the supported stability-control command.
STEERING WEIGHT ADJ	Adjusts the supported steering-assist weight.
DRIVE LOGIC SWITCH	Changes the supported transmission Drivelogic setting.
IDRIVE.HOME	Opens the supported iDrive home screen.
IDRIVE.OPTION	Opens the supported iDrive options command.
IDRIVE.UP	Moves upward in the supported iDrive interface.
IDRIVE.DOWN	Moves downward in the supported iDrive interface.
IDRIVE.LEFT	Moves left in the supported iDrive interface.
IDRIVE.RIGHT	Moves right in the supported iDrive interface.
IDRIVE.CW	Rotates the supported iDrive controller clockwise.
IDRIVE.CCW	Rotates the supported iDrive controller counterclockwise.
IDRIVE.OK	Confirms the highlighted supported iDrive item.
IDRIVE.BACK	Returns to the previous supported iDrive screen.

CONTROL PLACEMENT

M Mode, adaptive suspension, Drivelogic, steering-weight, and iDrive commands require the corresponding BMW F equipment and configuration.

GENERAL VEHICLE FUNCTIONS

MADTRACELAB FUNCTION	COMMAND PURPOSE
NONE	Leaves the selected input unassigned.
BC	Activates the supported board-computer display command.
FLASH	Activates the supported high-beam flash command.
LEFT TURN SIGNAL	Activates the supported left turn signal.
RIGHT TURN SIGNAL	Activates the supported right turn signal.
SINGLE WIPE	Requests one supported windshield-wiper cycle.
WINDSHIELD WASHER	Activates the supported windshield-washer command.

- BC, turn-signal, high-beam, and windshield commands are configuration dependent and must be verified on the actual car.
- Do not assume the same input map behaves identically across chassis codes, markets, transmissions, equipment packages, coding, or software revisions.

VEHICLE FITMENT + INCLUDED EQUIPMENT

APPLICABLE BMW F CHASSIS MODELS

APPLICATION GROUP	MODELS	PROFILE NOTE
WITH M1 AND M2 BUTTONS	BMW M2 / M3 / M4 · F80 / F82 / F83 / F87	M1 and M2 commands are available only where equipped and supported.
WITHOUT M1 AND M2 BUTTONS	BMW NON-M · 2 3 4 series	Use the non-M mapping without M1 and M2 assignments.

EACH FORMULA LINE HUB KIT INCLUDES

- 1x FORMULA Line control hub unit
- 1x Quick-release base with integrated chassis PCB
- 1x CAN bus integration module
- 1x Vehicle harness kit
- 1x Resistor
- 1x Adapter hub (Boss Kit)

- 1x Adapter hub locking wrench
- 1x Trim-removal tool
- 1x Hardware kit
- 1x Allen key
- 1x Button-sticker set
- 1x JQ Werks / Madtrace sticker set
- 1x USB-C cable

FORMULA STANDARD EQUIPMENT

The OLED DID, RevLED shift lights, 290 mm Formula wheel, and two programmable magnetic paddle inputs are integrated; MOMO and NARDI adapters are not offered.

CONFIGURATION WORKFLOW

- 1 Confirm the exact BMW F chassis code, M or non-M steering-wheel configuration, market, transmission, factory steering-wheel equipment, iDrive generation, driver-assistance equipment, coding, and installed options.
- 2 Install the vehicle-specific adapter hub, harness, CAN integration module, and quick-release base according to the applicable guide. Do not splice factory wiring.
- 3 Connect the control hub through USB-C and confirm compatible MadtraceLAB software and system updates.
- 4 Select the BMW F Chassis vehicle profile and map only commands supported by the actual vehicle, transmission, factory equipment, market, and coding. Use M1/M2 only on supported M applications.
- 5 Create Profile 1 as the verified baseline. Copy that layout to Profiles 2 and 3 before condition- or driver-specific changes.
- 6 With the vehicle stationary, test every button, joystick direction, rotary action, all two paddles, profile selection, RevLED sequence, OLED DID command, and mapped cruise, ACC, M, iDrive, lighting, or wiper function.
- 7 Repeat verification after any software update, vehicle change, transmission change, coding change, equipment change, calibration update, hardware change, or profile revision, then record the final map.

IMPORTANT

This is a high-level configuration workflow, not an installation manual. Follow application-specific instructions and use a qualified professional where required.

SAFETY, USE RESTRICTIONS + SUMMARY

IMPORTANT SAFETY INFORMATION

The JQ Werks Madtrace Racing Steering Wheel System is designed only for off-road, track, racing, and competition purposes. It is not intended for street use.

Installation removes the factory steering wheel and airbag. A solid racing steering wheel can increase the risk of bodily injury in a collision.

Do not use the system with the factory three-point seat belt. JQ Werks requires a six-point racing harness with a racing roll bar for off-road use.

Do not install the system on a vehicle subject to state safety inspection.

Laws and required safety equipment vary by country, state, and region. Consult qualified legal and motorsport-safety professionals.

Professional installation, complete stationary function testing, and driver familiarization are recommended before track use.

CONTROL WITH PURPOSE.

JQ WERKS x MADTRACE

SUMMARY

For supported BMW F Chassis applications, the GEN2 FORMULA Line combines a purpose-designed 290 mm GT wheel, CAN + LIN vehicle integration, 45 configurable commands, three stored profiles, RevLEDs, OLED telemetry, and two programmable magnetic paddles in one removable driver-control platform.