Ford P5 Parameters

Configurable parameters for the
Ford F-150 ADAS Kit

1 Overview

The parameters described in this document allow configuration of several features of the drive-by-wire system. Parameters can be changed using the DbwConfig.exe Windows application and connecting to modules via USB. See DbwConfig.pdf for details on this process.

Parameters are stored in non-volatile memory, so it is not necessary to set the values each power cycle. The section of non-volatile is not erased by the firmware upgrade process, so values persist between firmware upgrades. If the min/max range changes for a parameter, the value will be sanitized to the new min/max range. It is recommended to visually check the parameter values after a firmware upgrade.

Parameter changes are active immediately, however, it is unwise to change parameters when the vehicle is in motion. Exercise caution when using non-default parameter values, as this will change the way the drive-by-wire system operates.

DISCLAIMER:

This product is intended for research purposes only. Steps have been taken to ensure function on power or communication loss. However, in no event shall Dataspeed Inc. be liable for any direct, indirect, punitive, incidental, special consequential damages, to property or life, whatsoever arising out of or connected with the use or misuse of its products.

2 Brake Module

2.1 Allow Ignoring Driver Overrides

Name	Default	Min	Max	Unit
AllowIgnore	True	—	—	—

This parameter enables or disables the ability of the user to ignore driver overrides by setting the IGNORE bit in the brake command message (ID 0x060).

2.2 Driver Override Threshold

Name	Default	Min	Max	Unit
OverrideThresh	200	50	2000	Nm

The override threshold parameter controls how far the user must press the brake pedal to trigger a driver override. The value of this parameter represents the torque induced by pressing the brake pedal.

2.3 Driver Override Hysteresis Time

Name	Default	Min	Max	Unit
OverrideHystMs	100	0	250	ms

The driver override hysteresis time parameter controls how many consecutive milliseconds the override threshold must be exceeded before a driver override is triggered.

2.4 External Brake Input Enable

Name	Default	Min	Max	Unit
ExtBrakeEnable	False	—	—	—

If enabled, shorting the digital input pin on the DB9 connector will trigger a constant braking value. The external brake input is the highest priority braking command source, and will trigger regardless of the the brake command CAN message and the state of the Watchdog Counter fault. This input is useful as an emergency stop button. The default is a 'large' amount of braking.

2.5 External Brake Input Value

Name	Default	Min	Max	Unit
ExtBrakeValue	3.00	0.00	5.00	m/s^2

This is the value for the constant braking of the external brake input described above.

2.6 Watchdog Counter Brake Value

Name	Default	Min	Max	Unit
WdcBrakeValue	1.00	0.00	5.00	m/s^2

This is the value for the constant braking when the Watchdog Counter fault is triggered. The default is a 'small' amount of braking, just enough to slowly bring the vehicle to a stop.

2.7 Suppress Watchdog Counter Faults

Name	Default	Min	Max	Unit
WdcSuppressDisabled	False	—	—	—

If set, the three fault sources for the Watchdog Counter in the table below are not considered. This allows commands to transition from EN=1 to EN=0 without triggering a Watchdog Counter fault. All modules independently determine these fault conditions, so this value should be the same for all modules in the same vehicle.

Value	Enum	Description
5	BRAKE_DISABLED	Brake module disabled without override when in gear or moving
9	THROTTLE_DISABLED	Throttle module disabled without override when in gear or moving
13	STEERING_DISABLED	Steering module disabled without override when in gear or moving

3 Throttle Module

3.1 Allow Ignoring Driver Overrides

Name	Default	Min	Max	Unit
AllowIgnore	True	—	—	—

This parameter enables or disables the ability of the user to ignore driver overrides by setting the IGNORE bit in the throttle command message (ID 0x062).

3.2 Driver Override Threshold

Name	Default	Min	Max	Unit
OverrideThresh	0.30	0.15	0.70	%

The override threshold parameter controls how far the user must press the throttle pedal to trigger a driver override. The value of this parameter represents the raw pedal position.

3.3 Driver Override Hysteresis Time

Name	Default	Min	Max	Unit
OverrideHystMs	100	0	250	ms

The driver override hysteresis time parameter controls how many consecutive milliseconds the override threshold must be exceeded before a driver override is triggered.

3.4 Suppress Watchdog Counter Faults

Name	Default	Min	Max	Unit
WdcSuppressDisabled	False	—	—	—

If set, the three fault sources for the Watchdog Counter in the table below are not considered. This allows commands to transition from EN=1 to EN=0 without triggering a Watchdog Counter fault. All modules independently determine these fault conditions, so this value should be the same for all modules in the same vehicle.

Value	Enum	Description
5	BRAKE_DISABLED	Brake module disabled without override when in gear or moving
9	THROTTLE_DISABLED	Throttle module disabled without override when in gear or moving
13	STEERING_DISABLED	Steering module disabled without override when in gear or moving

4 Steering Module

4.1 Allow Ignoring Driver Overrides

Name	Default	Min	Max	Unit
AllowIgnore	True	—	—	—

This parameter enables or disables the ability of the user to ignore driver overrides by setting the IGNORE bit in the steering command message (ID 0x064).

4.2 Driver Override Threshold

Name	Default	Min	Max	Unit
OverrideThresh	4.5	2.00	4.5	Nm

The override threshold parameter controls how much torque the user must induce on the steering column to trigger a driver override.

4.3 Unlimited Steering Velocity

Name	Default	Min	Max	Unit
UnlimitedSteering	False	—	—	—

If false, SVEL=0 corresponds to a 500 deg/s steering velocity limit. If true, SVEL=0 corresponds to unlimited steering velocity. Use caution with unlimited steering velocity. Sporadic and jerky steering commands may cause unintended driver overrides that will transition control back to the human driver.

4.4 Inhibit Idle Shutdown

Name	Default	Min	Max	Unit
InhibitIdleShutdown	False	—	—	—

If set, the drive-by-wire system will prevent the vehicle from shutting itself down after 30 minutes of inactivity. Similar behavior can be accomplished by setting Auto Engine Off to 'Disabled' in the dash with the steering wheel buttons. However, the value in the dash is reset to 'Enabled' each vehicle ignition cycle. This drive-by-wire option is persistent across ignition cycles.

4.5 Suppress Watchdog Counter Faults

Name	Default	Min	Max	Unit
WdcSuppressDisabled	False	—	—	—

If set, the three fault sources for the Watchdog Counter in the table below are not considered. This allows commands to transition from EN=1 to EN=0 without triggering a Watchdog Counter fault. All modules independently determine these fault conditions, so this value should be the same for all modules in the same vehicle.

Value	Enum	Description
5	BRAKE_DISABLED	Brake module disabled without override when in gear or moving
9	THROTTLE_DISABLED	Throttle module disabled without override when in gear or moving
13	STEERING_DISABLED	Steering module disabled without override when in gear or moving

5 Shifting Module

5.1 Suppress Watchdog Counter Faults

Name	Default	Min	Max	Unit
WdcSuppressDisabled	False	—	—	—

If set, the three fault sources for the Watchdog Counter in the table below are not considered. This allows commands to transition from EN=1 to EN=0 without triggering a Watchdog Counter fault. All modules independently determine these fault conditions, so this value should be the same for all modules in the same vehicle.

Value	Enum	Description
5	BRAKE_DISABLED	Brake module disabled without override when in gear or moving
9	THROTTLE_DISABLED	Throttle module disabled without override when in gear or moving
13	STEERING_DISABLED	Steering module disabled without override when in gear or moving