



Blue iQ[®] User Manual

USM.0001

January 7, 2021

This manual should be kept in the vehicle.

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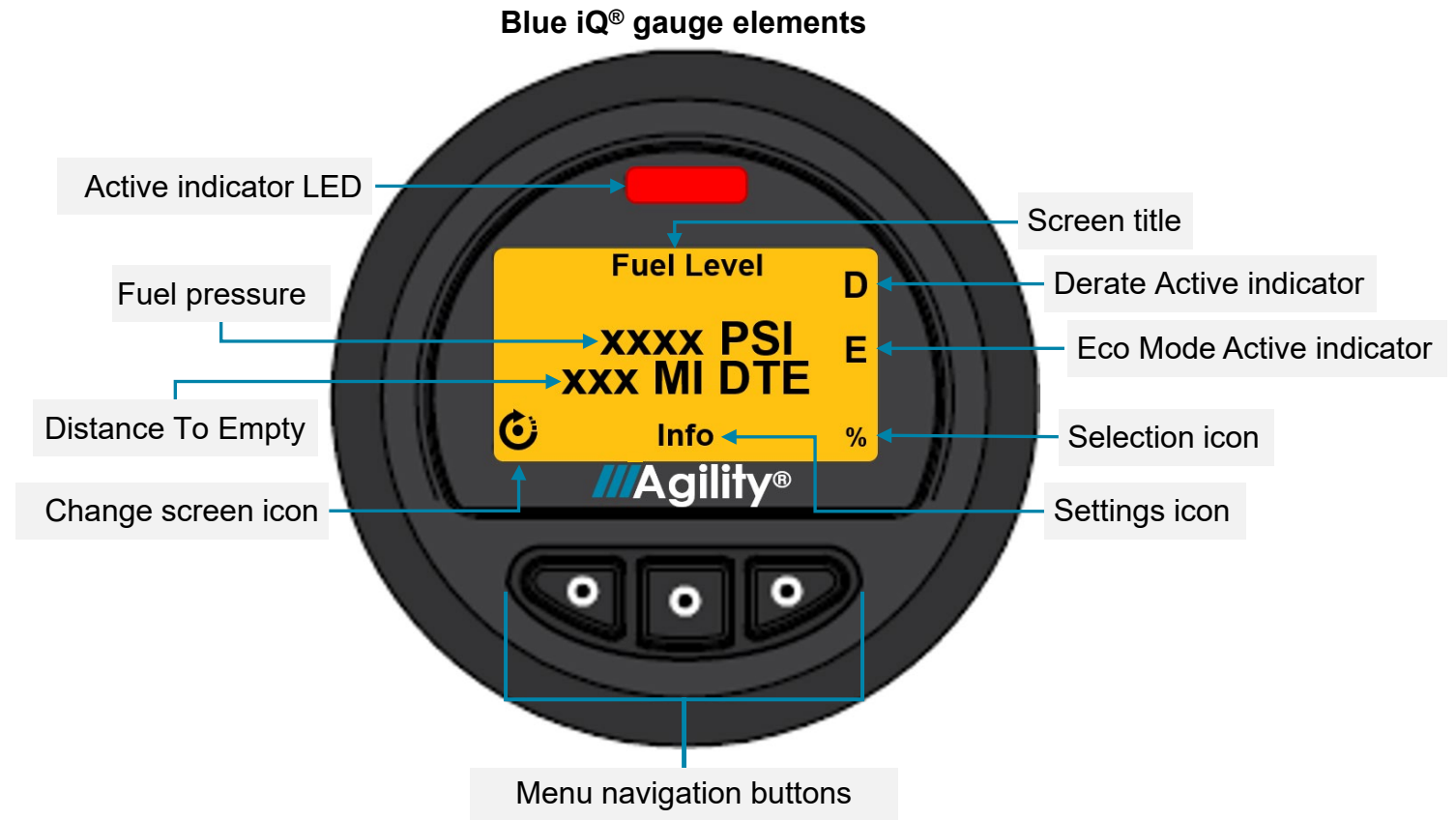
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1. Introduction

Agility® compressed natural gas (CNG) fuel systems equipped with **Blue iQ®** access original equipment manufacturer (OEM) Cummins® engine data to maximize vehicle uptime and optimize performance. Blue iQ sensors monitor system pressure and temperature to deliver accurate temp-compensated fuel readings via a multifunction dashboard gauge.

Blue iQ provides crucial system monitoring and operating data including real-time fuel economy, and places multiple functions at one's fingertips.

- **Engine-Linked Startup Logic** protects fuel system and engine and guards against downtime in cold conditions
- **Vehicle Range Monitor** calculates distance with fuel on board, provides constant and accurate fuel readings, and instant fuel economy feedback
- **Eco Mode** enhances fuel economy and extends vehicle range
- **Low Fuel Derate** permits safe exit from traffic at extremely low fuel levels
- **Over Temperature Warning** alerts driver of potentially unsafe operating conditions



2. Safety

⚠ WARNING Always read OEM vehicle and CNG system user manuals before attempting to operate vehicle and follow all OEM operating instructions.

⚠ WARNING Users must be trained in CNG vehicle operation before attempting Blue iQ system functions.

⚠ WARNING Never allow Blue iQ gauge use to interfere with safe vehicle operation.

2.1. Warnings and Signal Words

Symbol

Definition

⚠ DANGER **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE **NOTICE** is used to address practices not related to physical injury, such as best practices or tips to help an operation or procedure go smoothly and prevent equipment damage.

3. System Startup

NOTICE Always perform OEM and fleet pre-trip vehicle inspection before attempting to operate a Blue iQ-equipped vehicle.

Starting a CNG vehicle is much like starting a gasoline- or diesel-powered vehicle. When the vehicle is powered on, the Blue iQ gauge will behave as follows:



Active indicator **red LED** lights up.



Display screen **backlight** illuminates.



Eight bar graph segments appear in display.



Agility® logo may appear briefly.



Display switches to **Fuel Level** function which is the default screen.

NOTICE Blue iQ gauge menu buttons do not function until default screen appears.

Blue iQ gauge active indicator LED flashes *red* if system is not ready.

3.1. System Not Ready Causes and Corrective Actions

If the **red** multifunction LED at the top of the Blue iQ gauge illuminates and the **Starter Lockout** screen appears at ignition on, the accompanying **display messages** indicate one or more of the following causes:

Low fuel pressure



Corrective Action:

1. Turn ignition off
2. Observe FMM high-pressure fuel gauge reading

≤ 50 psi /
344 kPa?

Yes

Add fuel

No

If equipped:
LP gauge < 50 psi / 344 kPa?

Fuel receptacle dust cap not installed / FMM door open



Corrective Action:

1. Turn ignition off
2. Inspect fuel receptacle dust cap(s) / close FMM door

Repeat starting sequence

Start?

Yes

Operate vehicle

No

Refer vehicle to service personnel

Fuel system not ready



Corrective Action:

1. Turn ignition off
2. Observe FMM high-pressure fuel gauge reading

≤ 50 psi /
344 kPa?

Yes

Add fuel

No

4. Using the Blue iQ Gauge

During normal operating conditions, the multifunction **active indicator LED** indicates fuel economy or a system issue by changing color:

Green = Efficient acceleration delivering favorable fuel usage.

Amber = Normal acceleration may turn the LED amber.

Red = Fuel system requires attention. **Causes may include the following:**

- **High fuel consumption** resulting from aggressive acceleration or other inefficient operation
- **Starter Lockout** triggered - *refer to Section 3.1.*
- **Low fuel** - *refer to Section 4.5.*
- Low fuel resulting in a **Derate** condition - *refer to Section 4.5.*
- **Fuel System Over Temperature Warning** - *refer to Section 6.*

⚠ WARNING Never allow Blue iQ gauge use to interfere with safe vehicle operation.

4.1. Instant Fuel Economy Update

Green LED illuminates when driving conditions are favorable for fuel economy.



Under normal acceleration the LED may turn **amber**.



During inefficient acceleration, a **red** LED indicates high fuel consumption.



4.2. Default Screen

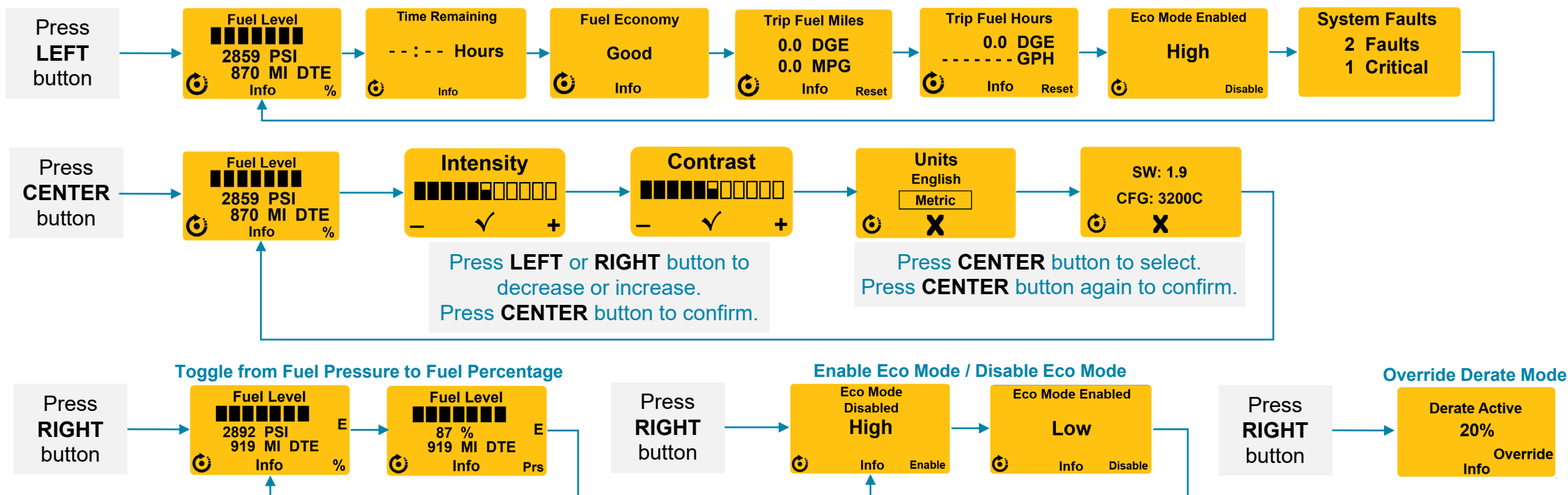
Fuel Level is the Blue iQ gauge default screen.



WARNING Never allow Blue iQ gauge use to interfere with safe vehicle operation.

NOTICE "E" indicates Eco Mode is enabled. Refer to Section 4.4.

4.3. Screen Button Navigation Sequence



4.4. Eco Mode

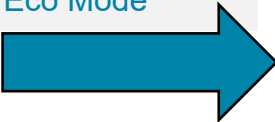
⚠ WARNING Never allow Blue iQ gauge use to interfere with safe vehicle operation.

Select **Eco Mode** for improved fuel economy and potentially longer range.

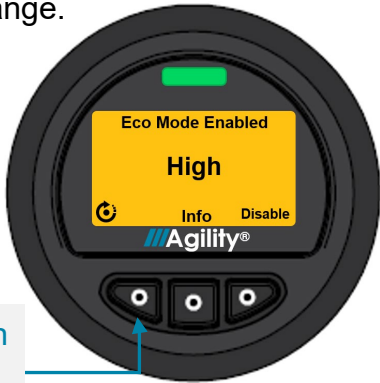
Press **LEFT** button to scroll to Eco Mode screen



Press **RIGHT** button to enable Eco Mode



Press **LEFT** button to scroll to next screen desired



Fleet managers may configure Eco Mode parameters as follows:

Eco Mode Level	Torque Limit
Low	~90%
Medium	~80%
High	~70%

Identify **Eco Mode Level*** by toggling through the Blue iQ gauge menu. Refer to Section 4.3.

NOTICE Eco Mode is disabled by default.

NOTICE *Eco Mode Level is not user selectable.

4.4.1. Disable Eco Mode

Deselect **Eco Mode** when more power is required.

NOTICE Follow instructions in Section 4.4. when Eco Mode is desired.

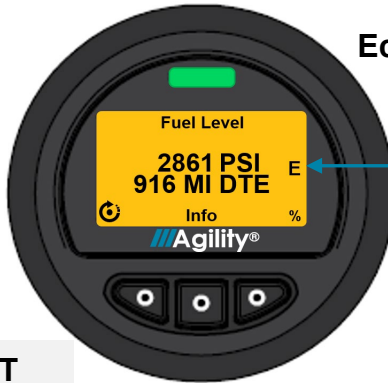
Press **LEFT** button to display Eco Mode screen



Press **RIGHT** button to disable Eco Mode



Press **RIGHT** button to resume Eco Mode



Eco Mode Active indicator

4.5. Progressive Fuel Level Messages and Derate

The active indicator LED and screen communicate relevant **Fuel Level** data using the following functions and messages:



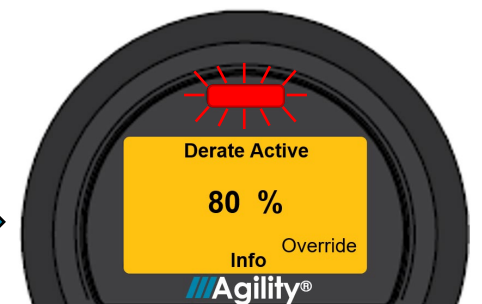
Fuel level $\geq 88.0\%$:
Green LED illuminates
Fuel Pressure (psi or kPa)
Distance To Empty (mi or km)



Fuel level $< 88\%$:
LED is **dark** (off)
Fuel Pressure and
Distance To Empty displayed



When the fuel system control module (FSCM) detects **low fuel***:
Red LED illuminates
Refuel message replaces bar graph
Corrective Action: Refuel ASAP.



If Refuel message is ignored:
Blue iQ® derates engine power
Red LED flashes
Corrective Action: Refuel ASAP.

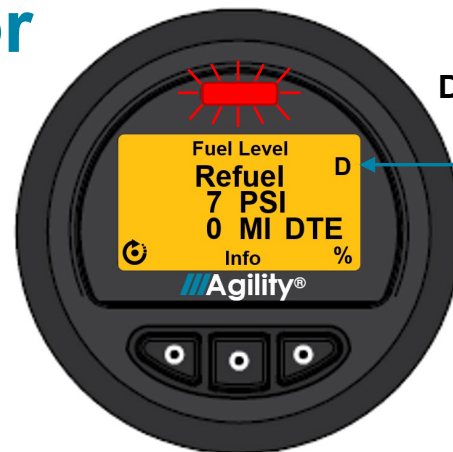
⚠ WARNING *Low Fuel message appears at a threshold determined by the vehicle fleet.

4.5.1. Derate Active Indicator

When Blue iQ diminishes power during a **Derate**, the driver may still use other gauge functions.

When the Blue iQ gauge is toggled to display **Fuel Level** or other parameters, an uppercase “D” at the upper right edge of the screen indicates the continued presence of the **Derate Active** condition.

⚠ WARNING Refuel ASAP to eliminate derate condition.



Derate Active Indicator

4.5.2. Override Derate

To temporarily disable a **Derate Active** condition when more power is required either:

1. Select “Override” on the Blue iQ gauge by pressing the **RIGHT** button,

OR

2. Carefully depress the accelerator pedal rapidly in two full ranges of motion in less than one second.

⚠ WARNING Never allow Blue iQ gauge use to interfere with safe vehicle operation.

⚠ WARNING Derate override will result in increased fuel usage which is already at a critical level.

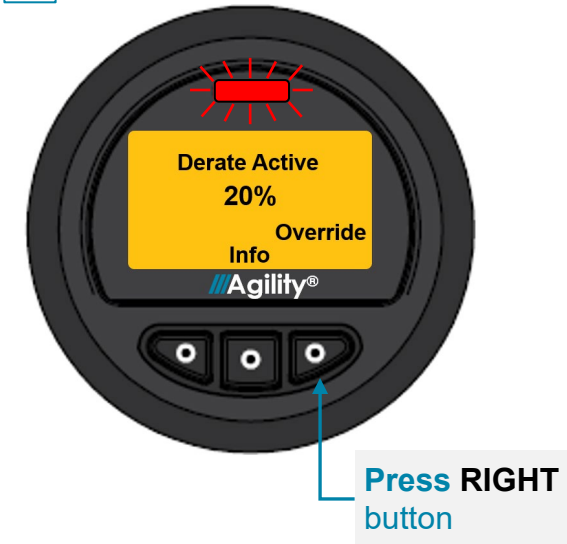
⚠ WARNING Be prepared for increased acceleration.

⚠ WARNING Derate override is NOT recommended except in extreme conditions.

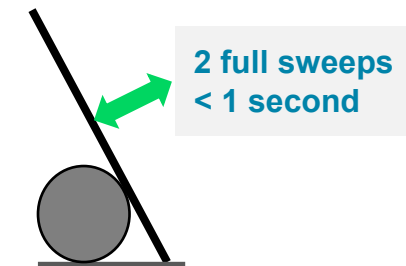
NOTICE Derate condition will automatically resume upon next key on.

⚠ WARNING Refuel ASAP to eliminate derate condition.

1 Blue iQ Gauge Override



2 Throttle Override



5. User-selectable Blue iQ Gauge Features

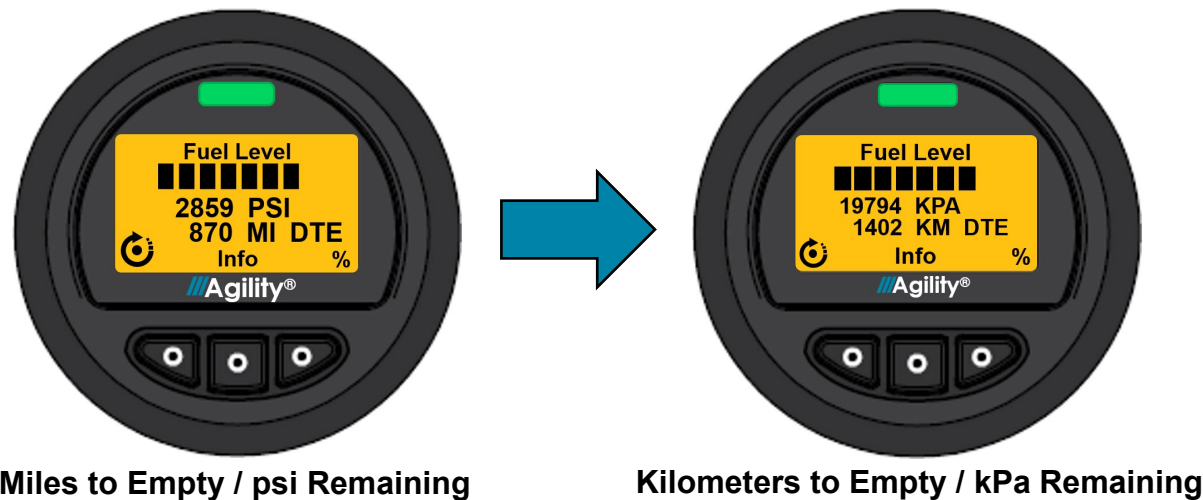
Configure Blue iQ gauge display data and features using the **following options**:

- Distance to Empty (DTE) / Fuel Pressure Remaining
 - Miles to Empty / psi Remaining
 - Kilometers to Empty / kPa Remaining
- Distance to Empty (DTE) / Percentage Fuel Remaining
- Time Remaining (select systems only)
- Units
- Intensity (brightness)
- Contrast
- Trip Data Monitoring

⚠ WARNING Never allow Blue iQ gauge use to interfere with safe vehicle operation.

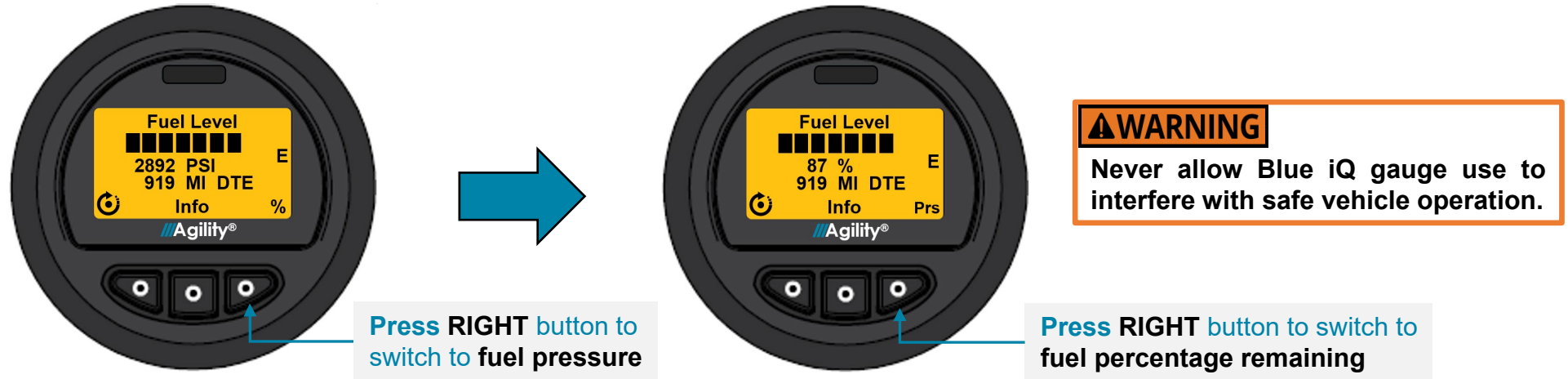
5.1. Distance to Empty (DTE) / Fuel Pressure Remaining

The default **Fuel Level** screen may be switched between **U.S. customary** and **metric** units. *Refer to Section 5.7.*



5.2. Distance to Empty (DTE) / Percentage Fuel Remaining

The default **Fuel Level** screen may be switched between **fuel volume** and **percentage fuel remaining**.



5.3. Time Remaining

Time Remaining screen displays **estimated run time**.*



**Time Remaining function is not available on all Blue iQ applications.*

5.4. Units Setup

Choose between English (U.S. customary) and metric units on the **Units** screen:

1

Press **RIGHT** button to select between English and metric units

“English” =
U.S. customary units

“Metric” =
International System units

2

Press **CENTER** button to retain **Units** setting

3

Press **CENTER** button again to advance to next screen

Units

English

Metric

X

Agility®

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⚠ **WARNING**

Never allow Blue iQ gauge use to interfere with safe vehicle operation.

5.5. Software Version

The **Software Version** screen displays version and software part number.*

Press **CENTER** button to return to default screen

SW: 1.8

CFG: 3202Z

X

Agility®

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⏩

⏹

*Software Version data is provided for informational purposes and is not configurable by the user.

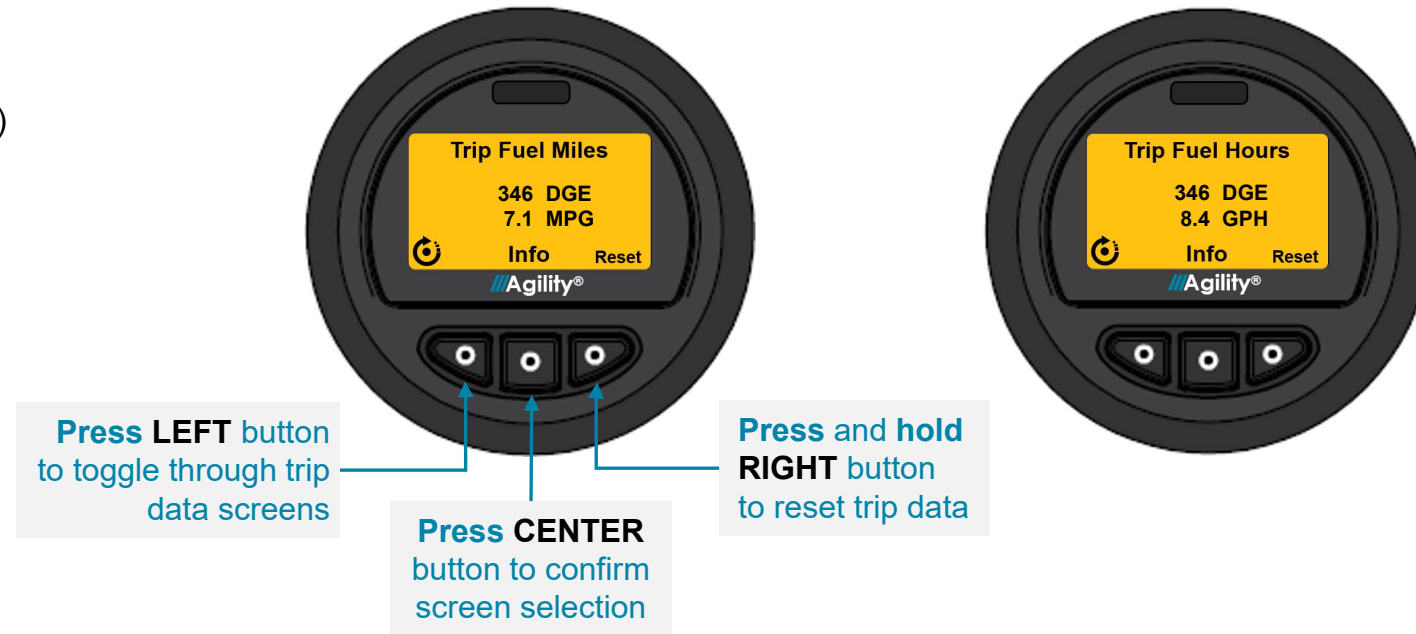
5.6. Trip Data Monitoring and Reset

Reset trip and other fuel system data using the Blue iQ gauge.*

Available selections:

- **Trip Miles per DGE** (diesel gallon equivalent)
- **Trip MPG** (miles per gallon)
- **DGE Used** (cumulative)
- **Trip Fuel Hours****
- **Trip Fuel Rate**** – GPH (gallons per hour)

⚠ WARNING Never allow Blue iQ gauge use to interfere with safe vehicle operation.



*Vehicle trip and other fuel system data may be recorded by fleet managers independent of Blue iQ gauge function.

**Trip Fuel Hours and Trip Fuel Rate may not be available on all Blue iQ applications.

5.7. Brightness and Contrast

Use the **Intensity** (brightness) and **Contrast** screens to increase or decrease Blue iQ gauge display brightness and contrast.

⚠ WARNING

Never allow Blue iQ gauge use to interfere with safe vehicle operation.



NOTICE

Default intensity and contrast settings are 50%.

6. Fuel System Over Temperature Warning

If temperatures over 165°F/74°C occur in or near the CNG cylinder enclosure, the Blue iQ gauge displays a “FUEL SYS TEMP” over temperature warning message and the LED indicator will flash **red**.

⚠ WARNING

Over temperature warning may indicate a fire in or near the fuel system.

⚠ WARNING

As soon as it is safe to do so, park vehicle, turn ignition off, and investigate the over temperature condition.

⚠ WARNING

In case of fire, call 9-1-1 and report the emergency.
Refer to vehicle emergency shutdown procedure.

⚠ WARNING

Have service personnel verify over temperature warning root cause.



NOTICE

Fuel System Over Temperature Warning is a “sticky” screen; it cannot be overridden once displayed. Display will self reset if the temperature returns to normal range.

7. System Faults

The Blue iQ gauge display may indicate CNG **System Faults** under the certain conditions.

NOTICE It is safe to operate the vehicle with faults, but always notify service personnel when fault messages appear.

NOTICE Blue iQ® fault codes do not trigger OEM check engine lights (CELs).

Service technicians may use Cummins® INSITE™ to retrieve fault codes to diagnose Blue iQ system issues.

NOTICE Blue iQ system fault messages can represent multiple fault codes.



8. System Components

Fuel filler door – If fuel door is not closed, Drive Away Protection (DAP) feature prevents engine start to guard against leaving CNG dispenser with fuel hose attached.

Fuel Management Module (FMM) – User fuel system interface comprising fuel fill, flow, filtration, pressure regulation, and control components; defuel components.

Fuel pressure sensor – HP fuel filter mounted transducer in the FMM monitors fuel system pressure.

Fuel receptacle dust caps – Dual-purpose fuel filler covers prevent debris and moisture intrusion and provide DAP to guard against leaving fuel dispenser with fuel hose attached.

Fuel System Control Module (FSCM) – Black box mounted in the Fuel Management Module (FMM) which controls and monitors fuel system functions.

Note: component looks like the Cummins after treatment controller.

Blue iQ gauge – Dash mounted driver performance aid and fuel system monitor.

Thermistors – Two thermistors measure temperatures inside fuel system enclosures to deliver accurate temperature-compensated fuel readings.

NOTICE Apart from fuel receptacle caps, no Blue iQ components are user serviceable; take vehicle to service personnel.

9. Glossary

Term/Abbreviation	Definition
Blue iQ gauge	driver configurable in-dash fuel system display
CNG	compressed natural gas
DAP	Drive Away Protection – safety feature preventing engine start if fuel receptacle dust caps are not in place or fuel filler door is not closed
Derate	reduction in engine power in response to a low fuel condition
DGE	diesel gallon equivalent – measure of natural gas capacity as compared to diesel volume
DTE	distance to empty
Eco Mode	fleet configurable Blue iQ operating parameter to maximize fuel system efficiency; Eco Mode is enabled by default, but driver may disable
English units	Blue iQ gauge option for units of measure utilizing miles for distance, psi for pressure, volume in gallons, and temperature in Fahrenheit. AKA: U.S. customary units. <i>Compare</i> : “metric units”
FMM	fuel management module – comprises fuel fill, flow, filtration, pressure regulation, and control components and defueling components
FSCM	fuel system control module – electronic FMM component which monitors and manages fuel system function
HP	high-pressure
INSITE™	Cummins® diagnostic tool
kPa	kilopascal – metric unit of pressure
LP	low-pressure
Low Fuel	fleet-adjustable bottom threshold to trigger a “Low Fuel” message
metric units	Blue iQ gauge option for International System units of measure utilizing kilometers for distance, kPa for pressure, volume in liters, and temperature in Celsius. <i>Compare</i> : “English units”
Over Temp Warning	Blue iQ gauge message indicating fuel storage temperature has risen above normal operating levels
psi	pounds per square inch – English unit of pressure

10. Contact Information



+1 855 500 2445 (toll-free, U.S. and Canada)

+1 949 267-7745



Support

support@agilityfs.com

Parts Orders

parts@agilityfs.com

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Agility Fuel Solutions
3335 Susan Street
Suite 100
Costa Mesa, CA 92626
USA

www.agilityfuelsolutions.com

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