



Vehicle Telematics

Training Manual

Version 24.x
Last Modified 24.0 | March 2024

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Technical Support

AssetWorks provides several ways to connect with the Customer Support team. Be prepared to provide detailed information to the representative. If you are reporting an issue by email, include screen shots of your problem. This will provide the Customer Support representative with the information needed to respond quickly and effectively.

Customer Support is available Monday through Friday, 7:00 a.m. to 7:00 p.m., Eastern Time.

Telephone: 1-610-225-8300

Email: M5Support@AssetWorks.com

Website: Community.AssetWorks.com

The support website can be used to open issues, subscribe to user groups, and download documentation, as well as to access the latest AssetWorks news. For secure access to the website, contact Customer Support by calling the number above.

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FleetFocus M5 Vehicle Telematics Overview

Note: The Telematics module requires integration with an additional program that will collect the fault code data. Please contact your Project Manager or M5 Customer Support for more information.

Modern Vehicles are controlled by computers that use sensors located throughout the engine, transmission and other major assemblies to constantly monitor the component. A vehicle's Electronic Control Unit (ECU) is the main computer on the vehicle and stores operating data and faults generated by the many sensors it connects to. The operating parameter data, diagnostic trouble codes (DTC), GPS location information and other electronic vehicle data is collectively referred to as telemetry or telematics.

Several different tools and communication methods are available that allow vehicle operators to access the data being stored in the ECU and use that information to monitor vehicle performance and manage its maintenance. Among the many ways that ECU data can be accessed are GPS-based vehicle locating systems that transmit ECU data along with the location of the vehicle, engine diagnostic tools that connect directly to the ECU and download data and in-cab solutions that alert drivers to vehicle parameters and trouble codes.

Depending on the age of your fleet vehicles you may have a variety of ECU types with different standards. The M5 Vehicle Telemetry Module is intended to provide a single method for capturing ECU parameter values and DTCs, processing this information into intelligent Work Requests and viewing historical telematics data for individual vehicles or groups of vehicles.

Each different vendor application uses a UIA adapter to load the ECU information into M5. Regardless of the application and adapter used the M5 Telemetry Module can process and store the information. This allows Fleet Managers to consolidate the collection of their telematics data and allows AssetWorks to support only a single module and the individual adapters.

FleetFocus M5 Functionality

FleetFocus M5 employs a service that captures general telematics data. The Service can be a web service or make use of standard queuing software to accept the data.

As part of this functionality, M5 captures and stores parameter data, readings and fault codes from the ECM into system tables. The data is stored in the TM_MESSAGES table. It can then be evaluated and used with custom reports and dashboards. The readings are stored in the TM_READINGS table. The fault codes are stored in the TM_ALERTS table.

Despite the variety of tools and methods available to read the ECU, the industry has developed standards for communicating with the ECU and standard structures for reporting the parameters and diagnostic trouble codes. The Society of Automotive Engineers has published standards that vehicle manufacturers were to adopt in programming their ECU's. Depending on the type of engine and the age of the vehicle, most vehicles built in the last 20 years use:

- **J1708** - An early SAE serial communication protocol found in older truck and buses.
- **J1939** - A newer SAE controller area network (CAN) protocol widely adopted by many diesel engine manufacturers.
- **J1979** (OBD-II) - The protocol used by light-duty gasoline-powered vehicles.

Telematic Fault Preferred Job

SAVE
UNDO
REFRESH
DELETE
FIND

Telematic Fault Preferred Job

Selection Criteria

Protocol: Element Type:

Subsystem:

Element:

Sort by:

Unit Fault Job List (Loaded 0 records)

Sub System	Element	Description	Prefered Job	No Action	No Fault	🔍
(No records displayed)						

The Telematic Fault Preferred Job frame displays a list of the unit fault codes for a particular protocol. It allows a user to enter a preferred job for a particular fault code or a default job. The default job reason can be set for all fault codes by setting the following system flags:

- **System Flag 5206** - Default job code for inspecting ECM faults.
- **System Flag 5207**- Default job reason for inspecting ECM faults.

The user can choose to select **No Action** when a fault code is recorded or to record as No Fault. The **No Fault** setting is common for fault codes that are informational only where no action is required. M5 uses the following sequence to search for the preferred job to apply to the fault:

- Tech Spec Main
- Category Main
- Fault Preferred Job Frame
- System Flags

Telematic Fault Query

Unit No	Protocol	Initial Fault Date	Fault Date	Sub System	Element Link	Read Status	FMI	Description	Fault Status	Insight ID	Insight Priority	Occurrence Order	Job Code	Work Request	Meter Readings	Detail
45195	J1939	16-Feb-2023 15:00:48	16-Feb-2023 15:00:48	6988	6383	R	6	Tire Pressure (Extended Ran	Active				01-01-001	15866520	1 2.3787	Detail
45195	J1939	16-Feb-2023 15:00:48	16-Feb-2023 15:00:48	6918	6918	R	7	SCR System Cleaning Inhibit	Active				01-01-001	15866520	1 2.3787	Detail

The Telematic Fault Query frame allows a user to query the fault codes for a unit or protocol in a variety of methods such as *Fault Read Status* codes, *Fault Dates* range, or by a **Work Order** or **Work Request**. The **Retrieve** button displays the records that meet the selection criteria in the *Unit Fault List* i-frame. To create a new query, select the **Clear** button.

Unit Fault List i-frame

The *Unit Fault List* i-frame displays the records that meet your selection criteria.

The *Fault Date* column displays the Alert Date.

The *Insight ID* link opens the Insight Notes window that displays Insight Cause and Insight Complaint fields. The Note Text and Change Information also displays.

Note: No Cause Notes Provided or No Complaint Notes Provided display when the Insight does not have Cause or Complaint notes.

The Insight Priority field indicates the Insight Priority:

- Critical – Red
- Major - Orange
- Minor – Yellow

If the **Detail** button is selected, the most current fault Latitude, Longitude, Last Date, Last Meter, and Source displays. The fault may be reported more than once. A record is not created for each fault, the Initial Fault Date is displayed, and the fault information is updated in the Detail Column.

Unit No	Protocol	Initial Fault Date	Fault Date	Sub System	Element Link	Read Status	FMI	Description	Fault Status	Insight ID	Insight Priority	Work Occurrence Order	Job Code	Work Request	Meter Readings	Detail
45195	J1939	16-Feb-2023 15:00:48	16-Feb-2023 15:00:48	6988	5588	R	6	Tire Pressure (Extended Ran	Active				01-01-001	15866520	1 2 3787	Latitude: Longitude: Last Date: Last Meter: Last Meter2: Source: S Close

Workflow Processing

After Fault code data is captured the record can be used to initiate Work Flow Processing by creating Work Requests and completing them on Work Orders.

Work Requests

From the Telematics Fault Query frame, the user can use the **Link WR** button to link an existing work request to a fault code or create a new work request for the fault code. After the link is made, the Status is now R - Read.

To create a new work request for the fault:

1. Select the **New Ticket** button. Enter the **Job Code**, **Job Reason**, and **Employee/Group** (optional).
2. Select the x on the right corner of the frame to return to the Telematics Fault Query.

SAVE UNDO REFRESH DELETE FIND

Link Work Request To A Fault

Work Request

Unit No:
DHRM162

Work Request:
New Ticket

Occurrence:
1

Job Code:
01-02-001 REPAIR RADIATOR GRILLE

Job Reason:
G EXT DATA JOB REASON

Employee/Group:

Apply to All:

SAVE UNDO REFRESH DELETE FIND

DTC: Active

Fault Read Status: Read Unread Cleared UnCleared All Actionable No Action

Fault Dates: From Date: 03/21/2019 00:00:00 To Date: 02/18/2021 00:00:00

Work Order/Work Request: Work Order: Work Request: Clear Retrieve

Unit Fault List (Loaded 6 records)

Unit No	Protocol	Initial Fault Date	Sub System	Element Link	Read Status	FMI	Description	Fault Status	Work Occurrence Order	Job Code	Work Request
DH1103	OBDII	10/17/2019 19:53:29	1	P0884	C		TCM Power Input Signal Inte	Active			Link WR
DHRM161	OBDII	12/17/2019 05:56:47		P04DB-00				Active			Link WR
DHRM161	OBDII	12/17/2019 05:56:47		P20BA-00	R			Active	533118445	05-04-002	<input type="text"/>
DHRM162	OBDII	12/16/2019 14:56:59		P04DB-00				Active		01-02-001	Link WR

3. Select the **SAVE** button to see the work request number created.

SAVE UNDO REFRESH DELETE FIND

DTC: Active

Fault Read Status: Read Unread Cleared UnCleared All Actionable No Action

Fault Dates: From Date: 03/21/2019 00:00:00 To Date: 02/18/2021 00:00:00

Work Order/Work Request: Work Order: Work Request: Clear Retrieve

Unit Fault List (Loaded 6 records)

Unit No	Protocol	Initial Fault Date	Sub System	Element Link	Read Status	FMI	Description	Fault Status	Work Occurrence Order	Job Code	Work Request	Meter Readings	Detail
DH1103	OBDII	10/17/2019 19:53:29	1	P0884	C		TCM Power Input Signal Inte	Active			Link WR	1 101 2	Detail
DHRM161	OBDII	12/17/2019 05:56:47		P04DB-00				Active			Link WR	1 96523 2 5401	Detail
DHRM161	OBDII	12/17/2019 05:56:47		P20BA-00	R			Active	533118445	05-04-002	<input type="text"/>	1 96523 2 5401	Detail
DHRM162	OBDII	12/16/2019 14:56:59		P04DB-00	R			Active		01-02-001	8522166	1 36451 2 2649	Detail

To link the fault to an existing work request:

1. Select the **Link WR** button.
2. Use Work Request LOV to select an existing, available work request.
3. Select the x on the right corner of the frame to return to the Telematics Fault Query.

You can navigate to Work Request Main by double-clicking the work request number.

SAVE
UNDO
REFRESH
DELETE
FIND
ATTACH
RELATED ▾

Work Request Main

Work Request

Serial#/Vin: 1FT8X3BT4EEB08283

Number: 8522166 Occurrence: 1 New Ticket

Job Code: 01-02-001 REPAIR RADIATOR GRILLE

Job Reason: G EXT DATA JOB REASON

Schedule Shift:

Max WO: 0

Create Date: 12/15/2021

Campaign No:

Tester:

Work Order:

+
General
Summary
Parts
Incidents
Estimates

Contact and Reference Information

Reported By:

Phone:

Maintenance Location: DH2

WR Source: Manual

Incident:

Accident No:

Requisition/Reference:

Doug 2

Employee/Group:

Alternate Unit No:

Quote No:

Dates

Earliest:

Due:

Latest:

Notification

Date:

The **View Fault Codes** hyperlink displays as red and the fault codes are described in the note area.

+
General
Summary
Parts
Incidents
Estimates

Contact and Reference Information

Reported By:

Phone:

Maintenance Location: DH2

WR Source: Manual

Incident:

Accident No:

Send to Vendor: No ▾

Preserve estimates?: No ▾

Direct Acct No:

Close-Out:

View Fault Codes

Dates

Earliest:

Due:

Latest:

Notification

Date:

Additional Information

Source:

Symptom:

Notes

Fault codes: P04DB-00 -

Work Order Processing

When the work order is opened, if there is a work request for the fault job it can be selected. If the user hovers over the work request, a note will appear describing the fault. If the unit has a fault, the **Clear Fault Codes** hyperlink appears on the work order when it is opened.

Work Order Information

Unit: DHRM162 2016 CIVIC EX Unit Status: Active Unit VIN: 1FT8X3BT4EEB08283

WO Number: 533118185 WO Status: OPEN Location: CNLOC1

Visit Information

Reason: 1 BILLING VISIT

Open: 04/16/2020 20:21:16

Completed:

Closed:

Due:

Downtime: 04/16/2020 20:21:16

WO Reference:

Parking Space:

Meter Information

Meter	Reading	Type
1	36451	Mile(s)
2	2649	Hour(s)

LTD Open Usage: 36451

LTD Maint Cost: \$0.00

YTD Maint Cost:

Contact Information

Name: Testing 123

Phone: (610)225-8339

Ext: 8331

Notified:

Pickup:

Cost Summary

Limit: \$0.00

Labor: \$0.00 Hrs: 0.00

Material: \$0.00

Comm: \$0.00

Total: \$0.00

Total Est Cost: \$0.00 Hrs: 0.00

No Reserve Parts
No Part Requests
Clear Fault Codes
No Warranty Claims
No Linked Job

Equipment Information

Equipment Condition:

Bin No:

Link/Clear Telematic Fault Codes

If the **Clear Fault Codes** hyperlink is selected, the Link/Clear Telematic Fault Codes frame opens.

SAVE
UNDO
REFRESH
DELETE
FIND
ATTACH
MORE
RELATED

Link/Clear Telematic Fault Codes

Unit Information

Work Order: Unit: CL01

Uncleared Fault Codes. (Loaded 1 records)

Protocol	Subsystem	Element	Description	FMI	Insight ID	Insight Priority	Job	Read Status
							01-01-000	Unread

The *Insight ID* link opens the *Insight Notes* window that displays **Insight Cause and Insight Complaint** fields. The Note Text and Change Information also displays.

Note: No Cause Notes Provided or No Complaint Notes Provided display when the Insight does not have Cause or Complaint notes.

The **Insight Priority** field indicates the Insight Priority:

- Critical – Red
- Major – Orange
- Minor – Yellow

The job code is entered for the fault that was cleared and the **Read Status** is updated to *Cleared*.

If the faults are not cleared, when the job status is changed to DON, the following message displays.

The screenshot displays the 'Work Order Main' interface. At the top, there are buttons for 'SAVE', 'UNDO', 'REFRESH', 'DELETE', 'FIND', 'ATTACH', 'MORE', and 'RELATED'. Below these is a 'Work Order Filter' section with fields for 'WO No:' (533118185), 'Unit No:' (DHRM162), and 'Alternate Unit No:'. A tabbed interface shows 'General', 'Job', 'Labor', 'Part', 'Comm', and 'Fluid' tabs. The 'Job' tab is active, showing 'Job Information (Record 1 of 1)' with a checkbox for 'Depress to select/unselect all jobs.' Below this is a table with the following data:

Job	Description	Zonar	Location	Status	Est Cost
01-02-001	REPAIR RADIATOR GRILLE	-	DH2	DON	\$0.00

An 'Action Required' dialog box is overlaid on the table, containing the following text:

Action Required

There are uncleared fault codes for the work order.

Press "Yes" to clear the fault code or take job(s) off the fault codes.
Press "No" if you wish to undo the status change.

Buttons for 'Yes' and 'No' are visible at the bottom of the dialog box.

Telematic Reading Query

The Telematic Reading Query frame allows a user to query reading codes for a unit or protocol.

SAVE
UNDO
REFRESH
DELETE
FIND

Telematic Reading Query

Selection Criteria

Unit: Protocol:

Reading Type: Reading Code:

Select Out of Range Reading:

Reading Dates

From Date: To Date:

Clear Retrieve

Unit Reading List (Loaded 0 records)

Unit No	Protocol	Reading Date	Reading Type	Reading Code	Description	Result	Minimum Value	Maximum Value	Work Order	Job Code	Work Request
(No records displayed)											

This frame can display any readings that are outside the expected range. In order to validate the results of the ECU parameters, the Test Suites functionality is used to establish the parameter codes and its minimum and maximum values if required. **Note:** There will be no actual Test Suite result created.

Test Suite Maintenance

A Test Suite is created for the type of vehicle parameter data to be tracked. Entries are made on the Test Suite to represent the parameter codes that will be sent to M5 from the telematics service provider. On the Test Suites these are referred to as labels. Based on the user's requirements, each label (parameter) will be defined with minimum and maximum values and any corrective jobs if required.

Refer to the *Test Suites Quick Reference Guide* for details on configuring this frame.

SAVE
UNDO
REFRESH
DELETE
FIND
RELATED ▾

Test Suite Maintenance

Test Suite Information

Test Suite Name: Enabled: (Yes ▾)

Next to Perform:

Linked Test Suite ID:

If any test item fails, Corrective Job data is as follows, unless overridden.

Code:

Reason:

Priority:

Allow user to override JobCode: SmartApps Checklist: Enforce Signature: Available on Direct Test Suite Entry: Show on Vehicle Safety Query: Add WR To Current Work Order:

+ **Test**
Subsections
User Instructions

Tests (Loaded 0 records)

Entry Seq	Change Order	Entry Label	ID Number	Entry Description	Group Header	Entry Subsection	Datatype	Table	Column	Minimum Value	Maximum Value	In-Range Only	Allow NA	Value Req	Override Job	Corrective Job Code	Corrective Job Reason	Corrective Job Priority	Info Only	Spawn Job	Fault Code	Def Fault Code	Cannot Be Driven	Attach Req	Disable

Tech Spec Main

The Test Suite is associated with the technical specification by entering the *Test Suite* name in the **Default Test Suite** field.

SAVE
UNDO
REFRESH
DELETE
FIND
RELATED ▾

Tech Spec Main

Technical Specification

Number: Description: Disabled: No ▾

+ Detail
Products
Exceptions
Unit/Comp
Assoc Tech Spec
Telematic Elements
Document Types
Zones2

Year / Manufacturer / Make / Model

Choose File No file chosen

Trim & Reference

Trim: Reference:

License Class Code

License Class Code: License Class Code Description:

Category

Category Number:

Expected Life: Year(s) Salvage %:

Expected Usage: Replacement %:

Gross Vehicle Weight: Off-Road Use%:

Test Suite Information

Default Test Suite:

Workflow Processing

When parameter data is sent, M5 will compare the parameter result data sent to the unit's tech spec Default Test Suite. Based on the configuration of the Test Suite, M5 will take the action required such as create a work request.

Work Request

When the work request is generated, the reading code is written to the note area.

Work Order Processing

When the work order is opened, if there is a work request for the out-of-range reading job it can be selected. If the user hovers over the work request, the note will appear describing the reading message.

Work Request List (Loaded 61 Records)											
<input type="checkbox"/>	01-15-007	REPAIR CONTROL VALVE - TIE ROD TYPE		1		07/30/2019	FM	9	0	\$0.00	Locked
<input type="checkbox"/>	01-15-011	REPAIR PITMAN ARM	Work Request Note: Deferred from Work Order# 920546. By User ID U0005139 on 10/5/2020			06/11/2019	NORMM	9	0	\$0.00	UnLocked
<input type="checkbox"/>	01-17-004	REPAIR TUBE - INI			1:07 PM.	08/03/2019	NORMM	5	0	\$0.00	UnLocked
<input checked="" type="checkbox"/>	01-77-002	REPAIR VERTICAL SUPPORTS		P		10/06/2020	FM	9	1	\$10.00	UnLocked

Out of Range Condition

To select the results for an out of range condition, use the Telematic Reading Query frame. Select **Out of Range Reading** checkbox and then select **Retrieve**.

SAVE
UNDO
REFRESH
DELETE
FIND

Telematic Reading Query

Selection Criteria

Unit: Protocol:

Reading Type: Reading Code:

Select Out of Range Reading:

Reading Dates

From Date: To Date:

Notification Processing

In addition, the READING OUT OF RANGE notification event can be enabled. This sends an email notification to email address on the location main record for the maintenance location of the unit.

Event Information (READING OUT OF RANGE)

Subject:
Telematics reading out is out of range. ***ASSETWORKS TEST MESSAGE***

Message:
Unit :U Telematics reading out is out of range.
ASSETWORKS TEST MESSAGE

Available

Assigned

Maint Loc of Unit

>>
<<

Message Variables

:ML = Maint Loc

:U = Unit No

Disabled:
Yes ▼

Reporting Fault Data

While there are no Standard Reports available for telematics data analysis, custom reports can be produced using Ad-hoc Reporting and Crystal Reports. Custom Dashboards can also be developed to support business requirements.

Updates

Release	Section	Description
23.2	Telematic Fault Query	Added Insight ID and Insight Priority fields.
23.2	Link/Clear Telematic Fault Codes	Added Insight ID and Insight Priority fields.
24.0	Test Suite Maintenance	Updated the reference file title name.
24.0	Telematic Fault Query	Added Fault Date column.