# MOST

**M**edia **O**riented **S**ystems **T**ransport

**Multimedia and Control
Networking Technology**

**MOST FBlock DebugMessages
Rev 3.1.0
12/2016**

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# Contents

# Bibliography

All documents, which this MOST document have references to, are listed here with the actual revision this document is referring to.

| Number | Document | Revision |
|--------|----------|----------|
| [1] | MOST Specification | 3.1 |

# Document History

### DebugMessages FBlock Rev. 3.1.0

| Change Ref. | FktID | Changes |
|---|---|---|
| 3V1-001 | 0x002 | – NetworkService_DebugMessage: Debug level is not adjustable. |

### DebugMessages FBlock Rev. 1.0.1

| Change Ref. | FktID | Changes |
|---|---|---|
| 1V01-001 | - | – Changed FBlockID to 0x09. |
| 1V01-002 | 0x000 | Adjust_Application_DebugMessage:<br>– Changed to Unclassified Property<br>– OPType Get now has FktID as parameter<br>– OPType Status now returns a list of FktID/DebugLevel pairs.<br>– The wildcard value for FktID is now 0xFFF instead of 0xFFFF. |

### DebugMessages FBlock Rev. 1.0

| Change Ref. | FktID | Changes |
|---|---|---|
| 1V0-001 | - | Initial version |

# 1 Introduction

A MOST Function Catalog is a collection of MOST Function Blocks (FBlocks).

This document contains the specification of an FBlock. MOST FBlocks are standardized and maintained by MOST workgroup Device Architecture (WG_DA). In order to speed up the process of making new FBlocks available, every FBlock will be updated individually as required.

# 2 Function Catalog

## 2.1 DebugMessages (FBlockID = 0x09)

The DebugMessages FBlock provides functions to send so-called "debug events". "Debug events" are categorized as error, warning, or info.
One "debug event" function corresponds to a hardware unit, software unit, or layer, or even a combination of those. The scope of the function is defined in its description.
The System Integrator may copy the defined debug event function Application_DebugMessage (0x003) to FktIDs 0x004 and higher and assign the copies to suppliers.
The DebugMessages FBlock is not included in the Central Registry. The InstID of the FBlock is equal to the node position of the device that implements the FBlock.

The debug event functions and their copies send their messages to the debug address (0x0FF0); no retries are performed.

*Note: Every debug message uses a Timestamp parameter. The source of that timestamp does not have to be identical for all debug event functions; even if debug events on the levels of Network Interface Controller, Network Service, and application are generated at the same time, the timestamps may differ, depending on the architecture of the system.*

In addition to the debug event functions, one function, Adjust_Application_DebugMessage is provided for adjusting the "debug level" for application-related debug events. This function changes the debug level of the Application_DebugMessage function (0x003) or the copies of that function, depending on the FktID parameter. The target address of Adjust_Application_DebugMessage is a regular device address and retries are performed.

*Note: "Application-related" is used in a broad sense here; it may be anything from application over boot loader to low level drivers.*

| Function Overview | | |
|---|---|---|
| **FktID** | **Name** | **Occurrence** |
| 0x000 | Adjust_Application_DebugMessage | Optional |
| 0x001 | NIC_DebugMessage | Optional |
| 0x002 | NetworkService_DebugMessage | Optional |
| 0x003 | Application_DebugMessage | Optional |

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## 2.1.1 Adjust_Application_DebugMessage (0x000)

Occurrence: Optional

This function is used to set the debug level for reporting debug events of the "application" category. This means that Adjust_Application_DebugMessage can change the debug level of Application_DebugMessage (0x003) and all supplier-specific copies of that function, depending on the FktID parameter.

### 2.1.1.1 Format of Function

**Function class:** Unclassified Property

| FBlock | Function | OPType | Parameter |
|--------|----------|--------|-----------|
| DebugMessages (0x09) | Adjust_Application _DebugMessage (0x000) | Set | FktID, DebugLevels |
| | | Get | FktID |
| | | SetGet | FktID, DebugLevels |
| | | Status | DebugLevelList |
| | | Error | ErrorCode, ErrorInfo |

### 2.1.1.2 Parameter

#### FktID

The FktID parameter identifies the function that is affected by Adjust_Application_DebugMessage. If FktID is set to 0xFFF, then Application_DebugMessage (0x003) and all supplier-specific copies are addressed.

| Basis data type | Unit | Exp. | Step | Range of values | Range description |
|-----------------|------|------|------|-----------------|-------------------|
| Unsigned Word | none | 0 | 1 | 3...4095 | |

#### DebugLevels

This parameter is used to configure which debug events will be reported. The default value is 0x00 (DebugLevelOff).

| Basis data type | Code | Name | Description |
|-----------------|------|------|-------------|
| Enum (1 byte) | 0x0 | DebugLevelOff | Debug Level: nothing is reported |
| | 0x1 | DebugLevelError | Debug Level: errors only |
| | 0x2 | DebugLevelWarning | Debug Level: errors and warnings |
| | 0x3 | DebugLevelInfo | Debug Level: errors, warnings, and info |

#### DebugLevelList

A list of FktID/DebugLevel pairs.

| Basis data type | Length | Description |
|-----------------|--------|-------------|
| Stream | | Content: {DebugLevelEntry}[repeated] |

## DebugLevelList.DebugLevelEntry

One FktID/DebugLevel pair.

Bit 15...12: DebugLevel of the corresponding FktID
Bit 11...0: FktID

| Basis data type | Unit | Exp. | Step |
|---|---|---|---|
| Unsigned Word | none | 0 | 1 |

## 2.1.2 NIC_DebugMessage (0x001)

Occurrence: Optional

This function provides debug events that are generated by the Network Interface Controller. This function will always transmit debug events of any debug level; it always includes information, warnings, and errors and cannot be adjusted.

### 2.1.2.1 Format of Function

**Function class:** Sequence Property

| FBlock | Function | OPType | Parameter |
|---|---|---|---|
| DebugMessages (0x09) | NIC_Debug Message (0x001) | Status | DebugLevel, Timestamp, CaseIdentifier, CaseSpecificValues |

### 2.1.2.2 Parameter

### DebugLevel

This parameter determines the debug level of the debug event.

| Basis data type | Code | Name | Description |
|---|---|---|---|
| Enum (1 byte) | 0x1 | DebugLevelError | Debug Level: error |
| | 0x2 | DebugLevelWarning | Debug Level: warning |
| | 0x3 | DebugLevelInfo | Debug Level: info |

### Timestamp

This is the timestamp of the originator of the debug event.
If the feature is not supported, use 0xFFFF FFFF.

| Basis data type | Unit | Exp. | Step |
|---|---|---|---|
| Unsigned Long | ms | 0 | 1 |

### CaseIdentifier

This 16 bit value identifies the debug event that occurred.

| Basis data type | Unit | Exp. | Step |
|---|---|---|---|
| Unsigned Word | none | 0 | 1 |

### CaseSpecificValues

Additional information about the debug event, depending on the CaseIdentifier.

| Basis data type | Length | Condition | Description |
|---|---|---|---|
| Stream | | CaseIdentifier = 0x0 | Reserved |
| | | CaseIdentifier = 0xFFFF | Reserved |

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## 2.1.3 NetworkService_DebugMessage (0x002)

Occurrence: Optional

This function provides debug events that are generated by the Network Service. This function will always transmit debug events of any debug level; it always includes information, warnings, and errors and cannot be adjusted.

### 2.1.3.1 Format of Function

**Function class:** Sequence Property

| FBlock | Function | OPType | Parameter |
|---|---|---|---|
| DebugMessages (0x09) | NetworkService_ DebugMessage (0x002) | Status | DebugLevel, Timestamp, CaseIdentifier, CaseSpecificValues |

### 2.1.3.2 Parameter

**DebugLevel**

This parameter determines the debug level of the debug event.

| Basis data type | Code | Name | Description |
|---|---|---|---|
| Enum (1 byte) | 0x1 | DebugLevelError | Debug Level: error |
| | 0x2 | DebugLevelWarning | Debug Level: warning |
| | 0x3 | DebugLevelInfo | Debug Level: info |

**Timestamp**

This is the timestamp of the originator of the debug event.
If the feature is not supported, use 0xFFFF FFFF.

| Basis data type | Unit | Exp. | Step |
|---|---|---|---|
| Unsigned Long | ms | 0 | 1 |

**CaseIdentifier**

This 16 bit value identifies the debug event that occurred.

| Basis data type | Unit | Exp. | Step |
|---|---|---|---|
| Unsigned Word | none | 0 | 1 |

**CaseSpecificValues**

Additional information about the debug event, depending on the CaseIdentifier.

| Basis data type | Length | Condition | Description |
|---|---|---|---|
| Stream | | CaseIdentifier = 0x0 | Reserved |
| | | CaseIdentifier = 0xFFFF | Reserved |

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# 2.1.4 Application_DebugMessage (0x003)

Occurrence: Optional

This function provides debug events that are generated by the application or other modules (e.g., boot loader, low level drivers, etc.). The verbosity (i.e., debug level) of this function can be changed through the Adjust_Application_DebugMessage function (0x000). By default, no debug messages are sent. Adjust_Application_DebugMessage is also used to change the debug level of supplier-specific copies of this function.

## 2.1.4.1 Format of Function

**Function class:** Sequence Property

| FBlock | Function | OPType | Parameter |
|---|---|---|---|
| DebugMessages (0x09) | Application_ DebugMessage (0x003) | Status | DebugLevel, Timestamp, CaseIdentifier, CaseSpecificValues |

## 2.1.4.2 Parameter

### DebugLevel

This parameter determines the debug level of the debug event.

| Basis data type | Code | Name | Description |
|---|---|---|---|
| Enum (1 byte) | 0x1 | DebugLevelError | Debug Level: error |
| | 0x2 | DebugLevelWarning | Debug Level: warning |
| | 0x3 | DebugLevelInfo | Debug Level: info |

### Timestamp

This is the timestamp of the originator of the debug event.
If the feature is not supported, use 0xFFFF FFFF.

*Note: Some Network Interface Controllers provide their time property as value; that time property may be reset with every Init Ready transition.*

| Basis data type | Unit | Exp. | Step |
|---|---|---|---|
| Unsigned Long | ms | 0 | 1 |

### CaseIdentifier

This 16 bit value identifies the debug event that occurred.

| Basis data type | Unit | Exp. | Step |
|---|---|---|---|
| Unsigned Word | none | 0 | 1 |

## CaseSpecificValues

Additional information about the debug event, depending on the CaseIdentifier.

| Basis data type | Length | Condition | Description |
|:---:|:---:|:---|:---|
| Stream | | CaseIdentifier = 0x0 | Reserved |
| | | CaseIdentifier = 0xFFFF | Reserved |

Notes: