MOST

Media **O**riented **S**ystems **T**ransport

**Multimedia and Control
Networking Technology**

**MOST FunctionBlock NetBlock
Rev 3.0.4
12/2016**

Legal Notice

COPYRIGHT

© Copyright 1999 - 2016 MOST Cooperation. All rights reserved.

SUPPORT AND FURTHER INFORMATION

For more information on the MOST technology, please contact:

MOST Cooperation
Administration
Emmy-Noether-Str. 14
76131 Karlsruhe
Germany

Tel: (+49) (0) 721 966 50 00

E-mail: contact@mostcooperation.com
Web: www.mostcooperation.com

This Specification is Confidential Information of the MOST Cooperation. It may only be disclosed to member companies. Member companies wishing to discuss these Specifications with suppliers or other third parties must ensure that a commercially standard form of non-disclosure agreement has been previously executed by the party receiving such Specifications. Use of these Specifications may only be for purposes for which they are intended by the MOST Cooperation. Unauthorized use or disclosure is a violation of law.

Bibliography

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

Number	Document	Revision
[1]	MOST Specification	3.0

Document History

Changes NetBlock FBlock 3.0.3 to NetBlock FBlock 3.0.4

Change Ref.	FktID	Changes
3.0.4-001	0x008	− SamplingFrequency: Made function optional.

Changes NetBlock FBlock 3.0.2 to NetBlock FBlock 3.0.3

Change Ref.	FktID	Changes
3.0.3-001	General	− Removed reference to GeneralFBlock Template because no functions from the GeneralFBlock are required anymore. − Removed reference to GeneralFBlock.Version and GeneralFBlock.FBlockInfo. (WGDA D116_5)
3.0.3-002	0x001	− DeviceInfo: Removed function. (WGDA D113_5_1)
3.0.3-003	0x003	− NodeAddress: Removed OPType SetGet. (WGDA D97_2, D113_9)
3.0.3-004	0x004	− GroupAddress: Removed OPTypes Set and SetGet. (WGDA D113_9)
3.0.3-005	0x007	− RetryParameters: Removed OPTypes Set and SetGet. (WGDA D113_9) − RetryParameters: Introduced upper range limit for RetryTime and RetryNumbers.
3.0.3-006	0x012	− ImplFBlockIDs: Modified description of parameter ImplFBlockIDs. (WGDA D110_4)
3.0.3-007	0x014	− MOSTVersionInfo: New function. (WGDA D101_25_2, D116_5)
3.0.3-008	0x401	− Notification: Removed function. (WGDA D113_9)
3.0.3-009	0x402	− NotificationCheck: Removed function. (WGDA D113_9)

Changes NetBlock FBlock 3.0.1 to NetBlock FBlock 3.0.2

Change Ref.	FktID	Changes
3.0.2-001	General	− Corrected invalid exponent and step values. − Filled the SymbolicName attribute for all Enums.
3.0.2-002	0x007	RetryParameters: − Modified description of parameter RetryTime.
3.0.2-003	0x401	Notification: − Removed blank after ClearAll Enum value of parameter Control.

Changes NetBlock FBlock 3.0.0 to NetBlock FBlock 3.0.1

Change Ref.	FktID	Changes
3.0.1-001	General	− Removed obsolete FunctionSection attributes.
3.0.1-002	0x001	DeviceInfo: − Changed CapabilityToWake to "Reserved". − Extended range of parameter ID to 0xBA.
3.0.1-003	0x005	− PermissionToWake: Deleted function PermissionToWake.
3.0.1-004	0x006	ShutDown: − Removed all OPTypes that were using the SenderHandle parameter. − Corrected inconsistent function class reference.
3.0.1-005	0x007	− RetryParameters: Changed description; RetryNumbers is the number of transmission attempts.
3.0.1-006	0x111	− Boundary: Distinguished between MOST50 and MOST150 ranges for Boundary.

Changes NetBlock FBlock 2.5.1 - Speed Grade MOST50 to NetBlock FBlock 3.0.0

Change Ref.	FktID	Changes
3.0.0-001	General	− Corrected ParamPos from 1 to 0 for parameterless OPTypes. − Modified boundary descriptor range--now 0..93. − Unified descriptions of identical parameters and corrected clerical errors. − Added Occurrence attribute to all functions.
3.0.0-002	0x006	− Changed function class for function ShutDown from Unclassified Method to Sequence Method. − Added OPTypes StartAck, ResultAck, and ErrorAck to function ShutDown.
3.0.0-003	0x007	− Changed function class for function RetryParameters from Unclassified Property to Sequence Property.
3.0.0-004	0x008	− Removed blank from function name of "Sampling Frequency".
3.0.0-005	0x009	− Added function ShutDownReason.
3.0.0-006	0x012	− Added function ImplFBlockIDs.
3.0.0-007	0x013	− Added function EUI48.
3.0.0-008	0x401	− Removed remarkt that Notification messages must not be segmented. This is already described in more detail in the MOST Specification. − Notification marked as deprecated.
3.0.0-009	0x402	− NotificationCheck marked as deprecated.
3.0.0-010	0x405	− Added function RBDResult.

Changes NetBlock FBlock 2.5.1 - Speed Grade MOST25 to NetBlock FBlock 2.5.1 - Speed Grade MOST50

Change Ref.	FktID	Changes
2.5.1-001	-	- Created NetBlock for speed grade MOST50, based on NetBlock 2.5.1 (speed grade MOST25).
2.5.1-002	0x100	- Removed function SourceHandles.
2.5.1-003	0xA03	- Modified range of Boundary Descriptor - previously 6-15, now 0-29.

1 Introduction

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 FBlock Definition

The NetBlock provides functions that affect a whole device. Each device has to contain the FBlock NetBlock.

Function Overview		
FktID	**Name**	**Occurrence**
0x000	FBlockIDs	Mandatory
0x002	NodePositionAddress	Mandatory
0x003	NodeAddress	Mandatory
0x004	GroupAddress	Mandatory
0x006	ShutDown	Mandatory
0x007	RetryParameters	Optional
0x008	SamplingFrequency	Optional
0x009	ShutDownReason	Mandatory
0x012	ImplFBlockIDs	Optional
0x013	EUI48	Conditional
0x014	MOSTVersionInfo	Mandatory
0x405	RBDResult	Mandatory
0xA03	Boundary	Conditional

2.1.1 FBlockIDs (0x000)

Occurrence: Mandatory

Property for querying the FBlocks that are implemented in a device and for setting the InstID.

2.1.1.1 Format of Function

Function classes: Unclassified Property

FBlock	Function	OPType	Parameter
NetBlock (0x01)	FBlockIDs (0x000)	Get	-
		SetGet	FBlockID, OldInstID, NewInstID
		Status	FBlockIDList
		Error	ErrorCode, ErrorInfo

2.1.1.2 Parameter

FBlockID

Functional address of an FBlock.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

OldInstID

Old InstID of the FBlock that is identified by FBlockID.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

NewInstID

New InstID for the FBlock that is identified by FBlockID.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

FBlockIDList

List of FBlockID/InstID pairs for the FBlocks that are implemented in the device.

Basis data type	Length	Condition	Description
Stream		-	Content: FBlockID (repeated), InstID (repeated)

InstID

Distinction of identical FBlocks in a system.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

2.1.2 NodePositionAddress (0x002)

Occurrence: Mandatory

Query the node position address of the device with this property.

2.1.2.1 Format of Function

Function classes: Number

FBlock	Function	OPType	Parameter
NetBlock (0x01)	NodePosition-Address (0x002)	Get	-
		Status	NodePositionAddress
		Error	ErrorCode, ErrorInfo

2.1.2.2 Parameter

NodePositionAddress

NodePositionAddress = 0x0400 + NodePosition (e.g., 0x0405, if the device has position 5 in the ring).

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Word	0	0x400...0x4FF	1	none

2.1.3 NodeAddress (0x003)

Occurrence: Mandatory

With this property, the logical node address of the devices can be queried.

2.1.3.1 Format of Function

Function classes: Number

FBlock	Function	OPType	Parameter
NetBlock (0x01)	NodeAddress (0x003)	Get	-
		Status	NodeAddress
		Error	ErrorCode, ErrorInfo

2.1.3.2 Parameter

NodeAddress

Calculated by each device when the network is initialized.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Word	0		1	none

2.1.4 GroupAddress (0x004)

Occurrence: Mandatory

With this property, the group address of the devices can be queried.

2.1.4.1 Format of Function

Function classes: Number

FBlock	Function	OPType	Parameter
NetBlock (0x01)	GroupAddress (0x004)	Get	-
		Status	GroupAddress
		Error	ErrorCode, ErrorInfo

2.1.4.2 Parameter

GroupAddress

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Word	0		1	none

2.1.5 ShutDown (0x006)

Occurrence: Mandatory

In normal operation mode, only the PowerMaster switches off the network.

2.1.5.1 Format of Function

Function classes: Sequence Method

FBlock	Function	OPType	Parameter
NetBlock (0x01)	ShutDown (0x006)	Start	Control
		Result	Control
		Error	ErrorCode, ErrorInfo

2.1.5.2 Parameter

Control

Enumeration of available values for the Control parameter.

Basis data type	Range of values	Code	Symbolic Name	Description
Enum	0x00...0x05	0x00	Query	Query
		0x01	Suspend	Suspend
		0x02	Execute	Execute
		0x03	Temperature	Temperature Shutdown
		0x04	DeviceShutdown	Device Shutdown
		0x05	WakeFromDeviceShut-down	Wake from Device Shutdown

2.1.6 RetryParameters (0x007)

Occurrence: Optional

With this property, the retry time of the devices can be queried.

2.1.6.1 Format of Function

Function classes: Sequence Property

FBlock	Function	OPType	Parameter
NetBlock (0x01)	RetryParameters (0x007)	Get	-
		Status	RetryTime, RetryNumbers
		Error	ErrorCode, ErrorInfo

2.1.6.2 Parameter

RetryTime

Number of time units (16 MOST frames) to wait between each retry.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0	3...31	1	none

RetryNumbers

Number of transmission attempts. This includes the first transmission attempt and all low level retries.

The maximum number of retries can vary between different implementations and detailed information can be found in their respective specifications.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0	1...31	1	none

2.1.7 SamplingFrequency (0x008)

Occurrence: Optional

This function is used to query the sampling frequency of the MOST network. SamplingFrequency may only be implemented in the device that contains the TimingMaster. Devices that do not implement SamplingFrequency report error "function not available".

2.1.7.1 Format of Function

Function classes: Number

FBlock	Function	OPType	Parameter
NetBlock (0x01)	SamplingFre-quency (0x008)	Get	-
		Status	SamplingFrequency
		Error	ErrorCode, ErrorInfo

2.1.7.2 Parameter

SamplingFrequency

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Long	0		1	none

2.1.8 ShutDownReason (0x009)

Occurrence: Mandatory

After the restart of the network, a unique controller may query all nodes for stored faults. This query takes place when the System Configuration State is OK, i.e., after the NetworkMaster has sent the Configuration.Status(OK) message. This unique controller sends the following single cast message to all devices:

NetBlock.ShutDownReason.Get()

The devices will answer with the corresponding Status message or with error "FktID not available" if the application is not available yet. When it has gathered the information from all devices, it sends

NetBlock.ShutDownReason.Set(0x00)

to all nodes. Only now all devices delete the stored shutdown reason. This ensures that in the case of a reappearing fault the result of the analysis is not corrupted.

In cases where the TimingMaster detects an error, the unique controller must ignore the shutdown reason in the TimingMaster if another device also reports the fault.

This NetBlock function is mandatory for all devices.

2.1.8.1 Format of Function

Function classes: Unclassified Property

FBlock	Function	OPType	Parameter
NetBlock (0x01)	ShutDownReason (0x009)	Set	SSOCUStatus
		Get	-
		Status	SSOCUStatus, DiagID
		Error	ErrorCode, ErrorInfo

2.1.8.2 Parameter

SSOCUStatus

Only 0x00 is allowed on OPType Set.

Basis data type	Range of values	Code	Symbolic Name	Description
Enum	0x00...0x03	0x00	NoResultAvailable	No result available
		0x01	NoFaultSaved	No fault saved
		0x02	SuddenSignalOff	Sudden Signal Off
		0x03	CriticalUnlock	Critical Unlock

DiagID

The diagnostic identifier of the device. The content is defined by the system integrator and its length has to be chosen so that the message can be sent as an unsegmented control message.

Basis data type	Length	Description
Stream		

2.1.9 ImplFBlockIDs (0x012)

Occurrence: Optional

Particularly when dealing with diagnostic mechanisms, it is important to have a reliable way of determining when the full system configuration has been reached. This information is, for example, necessary as the trigger for certain checks--such as the comparison of rated and actual configuration-- and the precondition for diagnostic services.
This property is only available if the node is fully operable. ImplFBlockIDs provides a static list with all implemented FBlocks.

This function is optional.

2.1.9.1 Format of Function

Function classes: Unclassified Property

FBlock	Function	OPType	Parameter
NetBlock (0x01)	ImplFBlockIDs (0x012)	Get	-
		Status	ImplFBlockIDs
		Error	ErrorCode, ErrorInfo

2.1.9.2 Parameter

ImplFBlockIDs

All application FBlocks (i.e., not NetBlock, ET) implemented by the device are contained in this list with their FBlockID and InstID. FBlocks that are implemented more than once must be included the corresponding number of times. In case of dynamic InstIDs, the InstIDs are numbered as reported by the device after first power on.

In the case that the application cannot report the implemented FBlocks, the NetBlock must return an error message if this function is called (0x41 - function temporarily not available). During the time when the Network Service has not initialized this function, the NetBlock must return an error message (0x03 - function not available). Otherwise, the NetBlock must return a complete list with the implemented FBlocks.

Note: If the application is available and ImplFBlockIDs returns an empty list, the device is a controller only.

Basis data type	Length	Condition	Description
Stream		-	Content: FBlockID (repeated), InstID (repeated)

FBlockID

Functional address of an FBlock.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

InstID

Instance ID of the FBlock.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

2.1.10 EUI48 (0x013)

Occurrence: Conditional

The presence of this function is conditional; it is required if the device supports Ethernet over MOST. The IEEE defined 48-bit extended unique identifier (EUI-48) is a concatenation of a 24-bit Organizationally Unique Identifier (OUI) value administered by the IEEE Registration Authority and a 24-bit extension identifier assigned by the organization with that OUI assignment.

2.1.10.1 Format of Function

Function classes: Sequence Property

FBlock	Function	OPType	Parameter
NetBlock (0x01)	EUI48 (0x013)	Get	-
		Status	EUI0, EUI1, EUI2, EUI3, EUI4, EUI5
		Error	ErrorCode, ErrorInfo

2.1.10.2 Parameter

EUI0

The first byte of the OUI.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

EUI1

The second byte of the OUI.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

EUI2

The third byte of the OUI.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

EUI3

The first byte of the extension identifier.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

EUI4

The second byte of the extension identifier.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

EUI5

The third byte of the extension identifier.

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none

2.1.11 MOSTVersionInfo (0x014)

Occurrence: Mandatory

This function identifies the version of

- the underlying MOST Specification
- the NetBlock
- the MOST transceiver

2.1.11.1 Format of Function

Function classes: Sequence Property

FBlock	Function	OPType	Parameter
NetBlock (0x01)	MOSTVersionInfo (0x014)	Get	-
		Status	MOSTVersion, FBlockVersion, MOSTTransceiverVersion
		Error	ErrorCode, ErrorInfo

2.1.11.2 Parameter

MOSTVersion

The version of the underlying MOST Specification.

Basis data type	MaxSize
String	#NULL#

FBlockVersion

The version of the NetBlock.

Basis data type	MaxSize
String	#NULL#

MOSTTransceiverVersion

The version of the MOST transceiver.

Basis data type	MaxSize
String	#NULL#

2.1.12 RBDResult (0x405)

Occurrence: Mandatory

The first device downstream the faulty network section (node in TimingMaster mode at the end of RBD phase 2) must transmit the result of the RBD test containing the status of the test and its diagnostic identifier via broadcast within RBD phase 3.
This information can be received by any device, where the information will be stored as the result of the RBD.

2.1.12.1 Format of Function

Function classes: Unclassified Property

FBlock	Function	OPType	Parameter
NetBlock (0x01)	RBDResult (0x405)	Status	RBDStatus, DiagID
		Error	ErrorCode, ErrorInfo

2.1.12.2 Parameter

RBDStatus

Status of the RBD result.

Basis data type	Range of values	Code	Symbolic Name	Description
Enum	0x00...0x02	0x00	ActivityAndLock	Activity and lock
		0x01	ActivityButNoLock	Activity but no lock
		0x02	NoActivity	No activity

DiagID

The diagnostic identifier of the device. The content is defined by the system integrator and its length has to be chosen so that the message can be sent as an unsegmented control message.

Basis data type	Length	Description
Stream		

2.1.13 Boundary (0xA03)

Occurrence: Conditional

The presence of this function is conditional; it is available only in the TimingMaster device, and therefore only accessible in the NetBlock with instance ID 0. The Boundary property is used for the administration of bandwidth for streaming data and packet data.

2.1.13.1 Format of Function

Function classes: Number

FBlock	Function	OPType	Parameter
NetBlock (0x01)	Boundary (0xA03)	Get	-
		SetGet	BoundaryDescriptor
		Status	BoundaryDescriptor
		Error	ErrorCode, ErrorInfo

2.1.13.2 Parameter

BoundaryDescriptor

Determines the bandwidth available for streaming data transmission in number of quadlets per MOST frame.

Speed grade	Parameter value range
MOST50	0...29
MOST150	0...93

Basis data type	Exp.	Range of values	Step	Unit
Unsigned Byte	0		1	none