BRITISH STANDARD

BS ISO 22902-5:2006

Road vehicles — Automotive multimedia interface —

Part 5: Common message set

ICS 43.040.15

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National foreword

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This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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Part 5: Common message set

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 22902-5 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 22902 consists of the following parts, under the general title *Road vehicles — Automotive multimedia interface*:

— *Part 1: General technical overview*

— *Part 2: Use cases*

— *Part 3: System requirements*

— *Part 4: Network protocol requirements for vehicle interface access*

— *Part 5: Common message set*

— *Part 6: Vehicle interface requirements*

— *Part 7: Physical specification*

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Introduction

This part of the standard Common Message Set concerns a set of application-layer messages that “AMI-C” multimedia networks must support and thus the name Common Message Set (CMS).

This part provides two types of information for system communication:

— *It defines the exact list of functions for, and therefore sets the boundary of, the communication in an “AMI-C” system. The communication could take place between an “AMI-C” compliant vehicle and an “AMI-C” network or between two “AMI-C” networks. The list of the functions is the consensus of ISO experts.*

— *It provides standardized descriptions of the listed functions in network-independent message format.*

The purpose of a CMS is to achieve interoperability and interchangeability among networked components in an “AMI-C” system. It does this by exactly defining the semantics of each message. The CMS is based on, and developed in, ASN.1 (Abstract Syntax Notation One). For any specific network technology, the CMS needs to be encoded in a manner consistent with the network protocol.

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Road vehicles — Automotive multimedia interface —

Part 5:
Common message set

1 Scope

This documents covers the following aspects of an Common Message Set:

- the Common Message Set definition;
- ASN.1 format for the Common Message Set;
- standardized descriptions of the selected functions in a network independent message format.

The descriptions cover the following message categories and classes:

- Management
  - Network management messages
  - Resource management messages
- Vehicle
  - Core messages
  - Body module messages
  - Powertrain messages
  - Vehicle diagnostics messages
- Audio / Video
  - Amplifier messages
  - General player messages
  - Disk media messages
  - Tape media messages
  - Tuner messages
- Phone
  - Basic phone messages
  - Advanced phone messages
- HMI
  - Text Display messages

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2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 8824-1, *Information technology — Abstract Syntax Notation One (ASN.1) — Part 1: Specification of basic notation*

ISO/IEC 8824-2, *Information technology — Abstract Syntax Notation One (ASN.1) — Part 2: Information object specification*

AMI-C 2003, AMI-C vehicle interface requirements, v1.00

ASN.1 Complete, Prof John Larmouth

ASN.1 – Communication between heterogeneous systems, Olivier Dubuisson, Morgan Kaufmann Publishers

3 Common Message Set Definition

Feature sets that can be uniquely addressed for messaging are defined as objects. A specific attribute of an object is called property of an object. Each object has one or more properties. For example, the odometer object can provide an absolute mileage property or the changed value (delta) property. Also, an object type can have multiple instances of it present in a vehicle. Multiple instances are designated through position of an object. For example, brake object has enumeration such as hand, engine, right foot, etc. An object with only one instance, e.g., engine, can be designated with a no-position enumerator.

3.1 Common Message Set Transaction

3.1.1 Message Type (Msg Type)

The Message Type indicates the action required on the destination node. Message Type can have 6 values: INQUIRE, REPORT, SET, CONFIRM, COMMAND, and WARNING.

Figure 1 illustrates the relationship between the INQUIRE and REPORT message types.

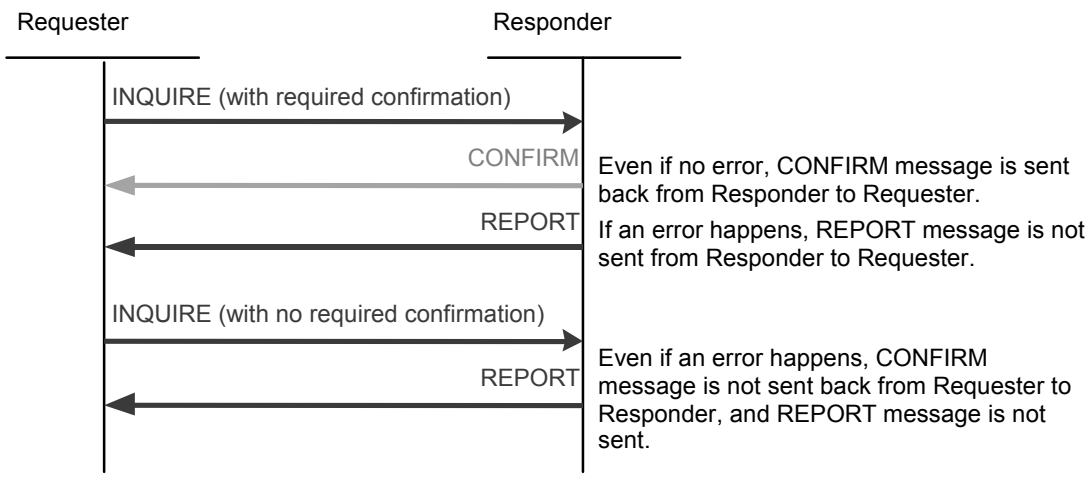

Figure 1 — INQUIRE and REPORT message sequence

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Figure 2 illustrates the relationship between the SET and CONFIRM message types.

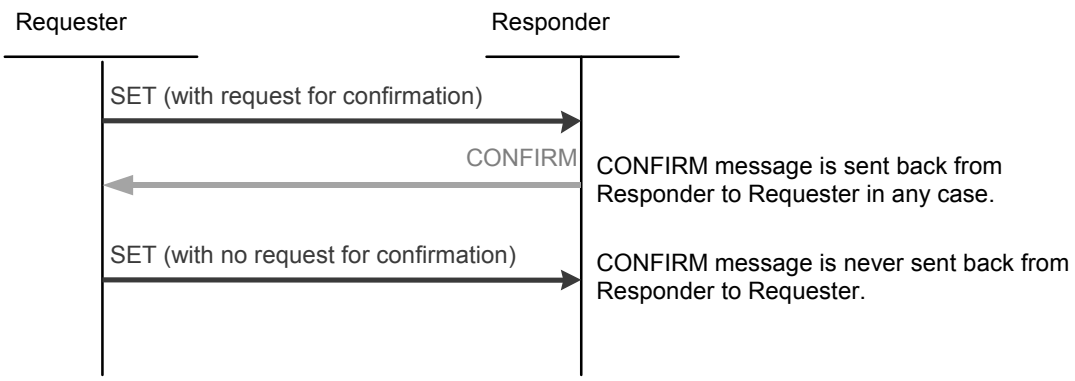

Figure 2 — SET message sequence

— INQUIRE - A request to obtain the current value of a property at one instant of time from an object.

— REPORT - A reply to an INQUIRE message, or asynchronously generated (in response to a request for subscription) message containing current value of one property at one instant of time.

— SET - A request to change the current value of one property at one instant of time.

— COMMAND - A message to perform the following five kinds of actions: start execution of software in a remote component, actuate device in a remote component, request access to resource, start subscription for a property or end subscription for a property.

— CONFIRM - A message to indicate success or error status of requested operation when a confirmation message is requested.

— WARNING - It is a message to send information to notify status to other nodes without any requests.

3.1.2 Message Class

The Message Class indicates to which class a message belongs. Classes are defined as follows:

— Management – network device management, audio/video stream management, and service discovery;

— Core – information that is originally inherent in a vehicle (VIN, static configuration information, etc.);

— Body Module – control and status related with body module (window, seat, mirror, light, trip meter, vehicle speed, etc.);

— Powertrain – status related with powertrain (oil temperature, coolant temperature, gear, etc.);

— Vehicle Diagnostics – message for vehicle diagnostics (ISO 15031-5 emission related, ISO 14229-1 non emission related);

— Amplifier – control related with amplifier and codec (volume, fade/balance, codec, etc.);

— General Player – common functions for disk and tape player;

— Disk Media – audio/video player for disk media (CD, MD, DVD, MP3, etc.);

— Tape Media – audio/video player for tape media (audio tape, VCR, etc.);

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— Tuner – audio/video broadcast tuner (AM, FM, XM, TV, etc.);

— General Phone – basic phone functionality (dial, hang-up, phone book, etc.);

— Advanced Phone – advanced phone functionality (short message, multi party call, conference call, etc.);

— Text Display – command to display simple texts and input texts.

3.1.3 Object Property

This field defines the property of an object that is going to be accessed. For example, a mirror can have 2 properties: vertical position and horizontal position. Their values are defined in Vehicle Interface Messages section.

3.1.4 Extension Possibility

In order to allow the addition of further Object Property codes (beyond 254), ISO 22902 defines the following expansion method. The restricted value 255 (FF16) indicates that the next 8 bit field (in place of Operand 0) contains the extended Object Property code.

3.1.5 Operands

These fields depend on the Message Type and the Object Property.

3.1.6 Message naming convention and 'opcode' for messages

Each ISO 22902 message name is concatenation of strings using "polish" notation. All the ISO 22902 messages start with the "Amic" label to distinguish them from other standard (such as AV/C, AT commands, etc.) or automaker proprietary messages. The next string in the convention is the abbreviated message class name. For example "core" message class is abbreviated by "Co" string. These two strings are concatenated with message type from BM (Body Module), PT (Powertrain), VD (Vehicle Diagnosis), Ap (Amplifier), GP (General Player), DM (Disk Media), TM (Tape Media), Tu (Tuner), BP (Basic Phone), AP (Advanced Phone), and TD (Text Display). The next three-letter string shows message type; for example, a "inquire message" is abbreviated by "Inq" string, Rpt (Report), Set (Set), Cmd (Command), and Cnf (Confirm). The last part of a message name contains object names and command modifier. Any name must use at most one literal from Message Classes, Message Types, Object Types and prefix with 'Amic", for example, "AmicCoRptVIN". The operands for each message are object tag, location (position) of the object, and the property identifier or the current value of the property.

— Generation of new messages

If a feature is introduced (due to new technology or re-allocation) for which there are no existing messages are defined, the following process is followed:

1) Survey existing messages in ISO 22902 for this feature. If extension of existing functional modules does not provide the feature, follow step 2. If extension is sufficient, verify & validate.

2) Survey external sources for messages for this feature. If adoption of external source is limited to a specific network, create a corresponding message description for convenience of mapping to other network. Verify & validate. If adoption or extension does not provide the feature, follow step 3.

3) Create a new message description based on the feature. Verify & validate using ISO 22902 adopted procedure.

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4 Management Messages

4.1 Release Version Number

This message is a request to get the ISO 22902 release and version number.

Supported Messages
Class = Management class
Object = Release Version number

Name	Operator	Type	Class	Object	Parameter
AmicMnInqRelVerNum	Inq	'000'B	'02'H	'00'H	N/A
AmicMnRptRelVerNum	Rpt	'001'B	'02'H	'00'H	Report
AmicMnCnfRelVerNum	Cnf	'011'B	'02'H	'00'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	majorRelease	INTEGER (2..31)	Major release number
	minorRelease	INTEGER (0..31)	Minor release number
	majorVersion	INTEGER (0..31)	Major version number
	minorVersion	INTEGER (0..31)	Minor version number

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

4.2 System Power Mode

This message is a request to get system power mode state.

Supported Messages
Class = Management class
Object = System power mode

Name	Operator	Type	Class	Object	Parameter
AmicMnInqSystemPMode	Inq	'000'B	'02'H	'01'H	N/A
AmicMnRptSystemPMode	Rpt	'001'B	'02'H	'01'H	Report
AmicMnCnfSystemPMode	Cnf	‘011’B	'02'H	'01'H	Confirm

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Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
	moduleState	AmicMnAttPowerMode	Power mode attribute

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttPowerMode			
Type	Name	Value / Type	Description
ENUMERATED	off	0	Power off
	active	1	Power on or wakeup
	lowPower	2	Description of this state is manufacturer specific.
	ultraLowPower	3	Ultra low power for specific devices that have this functionality. Description of this state is manufacturer specific.

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

4.3 Power State

This message is a request to get power state information of each module, power off, low power, or active (power-on or wake-up). A state of component itself as a physical node is managed by its transaction management module.

Supported Messages
Class = Management class
Object = Power state

Name	Operator	Type	Class	Object	Parameter
AmicMnInqPowerState	Inq	'000'B	'02'H	'02'H	N/A
AmicMnRptPowerState	Rpt	'001'B	'02'H	'02'H	Report
AmicMnSetPowerState	Set	'010'B	'02'H	'02'H	Set
AmicMnCnfPowerState	Set	'011'B	'02'H	'02'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
	moduleState	AmicMnAttPowerState	Power state attribute

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Set Parameter(s)			
Type	Name	Value / Type	Description
	moduleState	AmicMnAttPowerState	Power state attribute

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttPowerState			
Type	Name	Value / Type	Description
ENUMERATED	sleep	0	Power off
	active	1	Power on or wakeup
	boot	2	the system is initializing
	shutdown	3	the system is preparing for sleep

AmicMnAttPowerState			
Type	Name	Value / Type	Description
ENUMERATED	sleep	0	Power off
	active	1	Power on or wakeup
	boot	2	the system is initializing
	shutdown	3	the system is preparing for sleep

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

4.4 Node Information Announcement

This message is to announce services about a certain node registered / un-registered in a master node to manage service information of each node. This message is sent to a master node to each node within the network.

Supported Messages
Class = Management class
Object = Node information announce

Name	Operator	Type	Class	Object	Parameter
AmicMnCmdNodeInfoAnnounce	Cmd	'100'B	'02'H	'05'H	Command
AmicMnCnfNodeInfoAnnounce	Cnf	‘011’B	'02'H	'05'H	Confirm

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Parameter Definition

Command Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	registration	BOOLEAN	TRUE is registration, FALSE is un-registration.
	functionType	AmicCmAttFunctionType	Function type
	instanceNum	INTEGER (1..14)	Instance number assigned
	numOfServices	INTEGER (0..255)	Number of services available in a certain module
	services	SEQUENCE OF AmicMnAttSpecificService	Specific service information

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicCmAttFunctionType			
Type	Name	Value / Type	Description
ENUMERATED	transManage	0	Transaction management module
	vehicleServiceInterface	1	Vehicle Service Interface
	clock	2	Clock
	gps	3	GPS unit
	antenna	16	Vehicle Antenna
	door	17	Door
	doorLock	18	Door lock
	window	19	Window
	mirror	20	Mirror
	mirrorRetract	21	Mirror Retract
	seat	22	Seat
	seatbelt	23	Seat Belt
	horn	24	Horn
	wiper	25	Wiper
	headLight	26	headlights
	parkingLight	27	parking Lights
	interiorLights	28	interior Lights
	hazardSignal	29	Hazard Signal
	thermometer	30	Thermometer
	steering	31	Steering
	seatOccupation	32	Seat Occupation
	odometer	33	Odometer
	tripCounter	35	Trip counter
	airbag	36	Air bag
	indicator	37	Warning indicator
	driverID	38	Driver ID
	rainSensor	39	Rain Sensor
	sunSensor	40	Sun Sensor value
	washingLiquid	41	Washing Liquid
	engineStartDisable	48	Engine Start Disable
	remoteStart	49	Remote Start

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AmicCmAttFunctionType			
Type	Name	Value / Type	Description
	performanceMode	50	Performance Mode
	coolantTemperature	51	Coolant Temperature
	engineRPM	52	Engine RPM
	engineOilPressure	53	Engine Oil Pressure
	engineOilTemperature	54	Engine Oil Temperature
	gearPosition	55	Gear Position
	prndlPosition	56	PRNDL Position
	cruiseControlState	57	Cruise Control State
	brakeFluidLevState	58	Brake Fluid Level State
	diagUnit	64	Diagnostic unit
	cd	80	CD (Compact Disc) player
	md	81	Mini Disc player
	dvdVideo	82	DVD video player
	dvdAudio	83	DVD audio player
	mp3	84	MP3 Player
	audioCassette	85	Audio cassette Player
	vcr	86	VCR Player
	amFmTuner	87	AM/FM radio tuner
	xmTuner	88	XM radio tuner
	tvTuner	89	TV tuner
	monitor	90	Monitor
	amplifier	111	Amplifier
	navigationUnit	112	Navigation unit
	phone	128	Phone
	textDisplay	144	Text display
	keyboard	145	Keyboard
	remoteController	146	Remote controller
	voiceUnit	147	Voice interface unit
	pda	160	PDA

AmicMnAttSpecificService			
Type	Name	Value / Type	Description
ENUMERATED	service0	0	
	service1	1	
	service2	2	
	service3	3	

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.5 General Service Information

This message is a request to find functional module(s) that has an identified function type within a network; that is, service discovery for CD, tuner, phone, and so on. This message is sent to a master node to manage service information of each node.

Supported Messages
Class = Management class
Object = General Service Information

Name	Operator	Type	Class	Object	Parameter
AmicMnInqGenServiceInfo	Inq	'000'B	'02'H	'06'H	Inquire
AmicMnRptGenServiceInfo	Rpt	'001'B	'02'H	'06'H	Report
AmicMnCnfGenServiceInfo	Cnf	'011'B	'02'H	'06'H	Confirm

Parameter Definition

Inquire Parameter(s)			
Type	Name	Value / Type	Description
	functionType	AmicCmAttFunctionType	Function type

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	functionType	AmicCmAttFunctionType	Function type
	numOfModules	INTEGER (0..14)	Number of modules which has identified function type
	instanceNum	SEQUENCE OF INTEGER (1..14)	Available instance numbers

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicCmAttFunctionType			
Type	Name	Value / Type	Description
ENUMERATED	transManage	0	Transaction management module
	vehicleServiceInterface	1	Vehicle Service Interface
	clock	2	Clock
	gps	3	GPS unit
	antenna	16	Vehicle Antenna
	door	17	Door
	doorLock	18	Door lock
	window	19	Window
	mirror	20	Mirror
	mirrorRetract	21	Mirror Retract
	seat	22	Seat
	seatbelt	23	Seat Belt
	horn	24	Horn
	wiper	25	Wiper
	headLight	26	headlights
	parkingLight	27	parking Lights
	interiorLights	28	interior Lights

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AmicCmAttFunctionType			
Type	Name	Value / Type	Description
	hazardSignal	29	Hazard Signal
	thermometer	30	Thermometer
	steering	31	Steering
	seatOccupation	32	Seat Occupation
	odometer	33	Odometer
	tripCounter	35	Trip counter
	airbag	36	Air bag
	indicator	37	Warning indicator
	driverID	38	Driver ID
	rainSensor	39	Rain Sensor
	sunSensor	40	Sun Sensor value
	washingLiquid	41	Washing Liquid
	engineStartDisable	48	Engine Start Disable
	remoteStart	49	Remote Start
	performanceMode	50	Performance Mode
	coolantTemperature	51	Coolant Temperature
	engineRPM	52	Engine RPM
	engineOilPressure	53	Engine Oil Pressure
	engineOilTemperature	54	Engine Oil Temperature
	gearPosition	55	Gear Position
	prndlPosition	56	PRNDL Position
	cruiseControlState	57	Cruise Control State
	brakeFluidLevState	58	Brake Fluid Level State
	diagUnit	64	Diagnostic unit
	cd	80	CD (Compact Disc) player
	md	81	Mini Disc player
	dvdVideo	82	DVD video player
	dvdAudio	83	DVD audio player
	mp3	84	MP3 Player
	audioCassette	85	Audio cassette Player
	vcr	86	VCR Player
	amFmTuner	87	AM/FM radio tuner
	xmTuner	88	XM radio tuner
	tvTuner	89	TV tuner
	monitor	90	Monitor
	amplifier	111	Amplifier
	navigationUnit	112	Navigation unit
	phone	128	Phone
	textDisplay	144	Text display
	keyboard	145	Keyboard
	remoteController	146	Remote controller
	voiceUnit	147	Voice interface unit
	pda	160	PDA

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.6 Specific Service Information

This message is a request to receive service information that has an identified functional module within a network; that is, detail service discovery. This message is sent to a master node to manage service information, or a specific node directly.

Supported Messages
Class = Management class
Object = Specific Service Information

Name	Operator	Type	Class	Object	Parameter
AmicMnInqSpServiceInfo	Inq	'000'B	'02'H	'07'H	N/A
AmicMnRptSpecificServiceInfo	Rpt	'001'B	'02'H	'07'H	Report
AmicMnCnfSpecificServiceInfo	Cnf	'011'B	'02'H	'07'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	functionType	OCTET STRING (SIZE(1))	Function type
	numOfServices	INTEGER (0..255)	Number of services available in a certain module
	services	SEQUENCE OF AmicMnAttSpecificService	Specific service information

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttSpecificService			
Type	Name	Value / Type	Description
ENUMERATED	service0	0	
	service1	1	
	service2	2	
	service3	3	

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.7 Vehicle Configuration Service

This message is to get Vehicle Configuration Service; which services related vehicle service interface are available.

Supported Messages
Class = Management class
Object = Vehicle Configuration Service

Name	Operator	Type	Class	Object	Parameter
AmicMnInqVehConfigServ	Inq	'000'B	'02'H	'08'H	N/A
AmicMnRptVehConfigServ	Rpt	'001'B	'02'H	'08'H	Report
AmicMnCnfVehConfigServ	Cnf	'011'B	'02'H	'08'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	bodyModuleStatus	AmicMnAttBMConfigServ	Body module status
	pwrTrainStatus	AmicMnAttPTConfigServ	Powertrain Status
	vehicleDiagnostics	AmicMnAttVDConfigServ	Vehicle diagnostics status
	hMIServices	AmicMnAttHMIConfigServ	HMI service status

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttBMConfigServ			
Type	Name	Value / Type	Description
BIT STRING	antenna	1	1=service configured
	doorStatus	2	1=service configured
	doorLock	3	1=service configured
	windows	4	1=service configured
	mirrors	5	1=service configured
	mirrorFold	6	1=service configured
	seats	7	1=service configured
	seatbelts	8	1=service configured
	horn	9	1=service configured
	wipers	10	1=service configured
	headlights	11	1=service configured
	parkingLight	12	1=service configured
	interiorLights	13	1=service configured
	hazardSignal	14	1=service configured
	exteriorTemperature	15	1=service configured
	steering	16	1=service configured
	seatOccupation	17	1=service configured
	odometer	18	1=service configured
	highResolutionDistanceAccumulator	19	1=service configured
	vehicleSpeed	20	1=service configured
	airBag	21	1=service configured
	fuel	22	1=service configured
	warningIndicatorState	23	1=service configured
	driverID	24	1=service configured

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AmicMnAttBMConfigServ			
Type	Name	Value / Type	Description
	rainSensor	25	1=service configured
	sunSensor	26	1=service configured
	washingLiquidLevel	27	1=service configured
	subscribingStatus	28	1=service configured
	subscribeData	29	1=service configured
	unsubscribeData	30	1=service configured
	windowPosition	31	1=service configured
	sunroof	32	1=service configured
	sunroofPosition	33	1=service configured
	turnSignal	34	1=service configured
	batteryCharge	35	1=service configured
	noiseLevel	36	1=service configured
	shutter	37	1=service configured
	fogLamps	38	1=service configured
	handBrakeStatus	39	1=service configured
	convertibleTop	40	1=service configured
	dashboardIllumination	41	1=service configured
	obstacleDistance	42	1=service configured
	tirePressure	43	1=service configured
	tireInflationMonitorStatus	44	1=service configured
	wheelSpeed	45	1=service configured
	ignitionKeyState	46	1=service configured
	engineRunning	47	1=service configured
	vehicleOwner	48	1=service configured
	interiorTemperature	49	1=service configured
	hVACFanSpeed	50	1=service configured
	hVACFanMode	51	1=service configured
	hVACMixDoorPosition	52	1=service configured
	rearWindowDefrost	53	1=service configured
	externalMirrorDefrost	54	1=service configured
	automaticHVACControlSetTemperature	55	1=service configured
	seatHeaterCooler	56	1=service configured
	steeringWheelHeater	57	1=service configured
	headlightTilt	58	1=service configured
	mapLights	59	1=service configured
	slidingDoorCommand	60	1=service configured
	securityAlert	61	1=service configured
	trunkFuelDoorOpenCommand	62	1=service configured
	reverseGearLights	63	1=service configured

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AmicMnAttPTConfigServ			
Type	Name	Value / Type	Description
BIT STRING	engineStartDisableServic e	1	1=configured
	engineStartDisable	2	1=configured
	remoteStart	3	1=configured
	performanceMode	4	1=configured
	coolantTemperature	5	1=configured
	engineRPM	6	1=configured
	engineOilPressure	7	1=configured
	engineOilTemperature	8	1=configured
	gearPosition	9	1=configured
	pRNDLPosition	10	1=configured
	cruiseControlState	11	1=configured
	brakeFluidLevelStatus	12	1=configured
	subscribingStatus	13	1=configured
	subscribeData	14	1=configured
	unsubscribeData	15	1=configured
	engineOilPressureStatus	16	1=configured
	cruiseControlSetSpeed	17	1=configured
	brakeState	18	1=configured
	variableSuspensionState	19	1=configured
	tractionControlState	20	1=configured
	engineCoolantLevel	21	1=configured
	engineCoolantPressure	22	1=configured
	engineOilLevel	23	1=configured
	engineOffTime	24	1=configured
	antilockBrakeSystem State	25	1=configured

AmicMnAttVDConfigServ			
Type	Name	Value / Type	Description
BIT STRING	emissionsRelated	1	1=configured
	enhanced	2	1=configured

AmicMnAttHMIConfigServ			
Type	Name	Value / Type	Description
BIT STRING	service1	1	1=configured (placeholder)
	service2	2	1=configured

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.8 Channel State

This message is a request to get channel state information.

Supported Messages
Class = Management class
Object = Channel State

Name	Operator	Type	Class	Object	Parameter
AmicMnInqChanState	Inq	'000'B	'02'H	'09'H	N/A
AmicMnRptChanState	Rpt	'001'B	'02'H	'09'H	Report
AmicMnCnfChanState	Cnf	'011'B	'02'H	'09'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	numberOfAudioChannels	INTEGER (0..63)	Number of audio channel allocated
	channels	SEQUENCE OF AmicMnAttChanState	Channel state data sequence

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttChanState			
Type	Name	Value / Type	Description
SEQUENCE	channelId	INTEGER (0..63)	Channel ID
	attribute	AmicMnAttChanMode	Analog or digital mode
	connectedSrcId	INTEGER (0..63)	Connected Src ID
	numOfSink	INTEGER (0..63)	Number of sink channel connected to the channel
	seqOfSinkId	SEQUENCE OF INTEGER (0..63)	Sequence of connected Sink ID

AmicMnAttChanMode			
Type	Name	Value / Type	Description
ENUMERATED	analog	0	Analog channel
	voice	1	Voice class digital audio channel
	cd	2	CD class digital audio channel
	dvda	3	DVD audio class channel
	mpeg1	4	MPEG1 class digital video channel
	mpeg2	5	DVD class digital video channel
	dv	6	DV class digital video channel
	iidc	7	IIDC class uncompressed video

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AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

4.9 Allocate Channel

This message is a command to allocate channel. Channel is a resource and needs to be allocated to transport stream data in a certain network.

Supported Messages
Class = Management class
Object = Allocate Channel

Name	Operator	Type	Class	Object	Parameter
AmicMnCmdAllocChan	Cmd	'100'B	'02'H	'0A'H	Command
AmicMnRptAllocChan	Rpt	'001'B	'02'H	'0A'H	Report
AmicMnCnfAllocChan	Cnf	'011'B	'02'H	'0A'H	Confirm

Parameter Definition

Command Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	chanMode	AmicMnAttChanMode	Channel mode to be allocated

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	chanId	INTEGER (0..63)	Channel ID

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttChanMode			
Type	Name	Value / Type	Description
ENUMERATED	analog	0	Analog channel
	voice	1	Voice class digital audio channel
	cd	2	CD class digital audio channel
	dvda	3	DVD audio class channel
	mpeg1	4	MPEG1 class digital video channel
	mpeg2	5	DVD class digital video channel
	dv	6	DV class digital video channel
	iidc	7	IIDC class uncompressed video

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AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

4.10 Deallocate Channel

This message is a command to de-allocate channel. It is necessary to disconnect source and sinks connected with this channel before de-allocate the channel.

Supported Messages
Class = Management class
Object = Deallocate channel

Name	Operator	Type	Class	Object	Parameter
AmicMnCmdDeallocChan	Cmd	'100'B	'02'H	'0B'H	Command
AmicMnCnfDeallocChan	Cnf	'011'B	'02'H	'0B'H	Confirm

Parameter Definition

Command Parameter(s)			
Type	Name	Value / Type	Description
	chanId	INTEGER (0..63)	channel ID to be deallocated

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.11 Connect Source

This message is a command to connect a source to a channel.

Supported Messages
Class = Management class
Object = Connect source

Name	Operator	Type	Class	Object	Parameter
AmicMnCmdConnectSrc	Cmd	'100'B	'02'H	'0C'H	Command
AmicMnCnfConnectSrc	Cnf	'011'B	'02'H	'0C'H	Confirm

Parameter Definition

Command Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	sourceId	AmicMnAttFunctionalModule	Identification with Function type and instance number
	chanId	INTEGER (0..63)	Channel ID to be connected with source

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttFunctionalModule			
Type	Name	Value / Type	Description
SEQUENCE	functionType	AmicCmAttFunctionType	Function type
	instanceNumber	INTEGER (0..15)	Instance Number (0 is assigned for anycast, and 15 is for broadcast)

AmicCmAttFunctionType			
Type	Name	Value / Type	Description
ENUMERATED	transManage	0	Transaction management module
	vehicleServiceInterface	1	Vehicle Service Interface
	clock	2	Clock
	gps	3	GPS unit
	antenna	16	Vehicle Antenna
	door	17	Door
	doorLock	18	Door lock
	window	19	Window
	mirror	20	Mirror
	mirrorRetract	21	Mirror Retract
	seat	22	Seat
	seatbelt	23	Seat Belt
	horn	24	Horn
	wiper	25	Wiper
	headLight	26	headlights
	parkingLight	27	parking Lights
	interiorLights	28	interior Lights
	hazardSignal	29	Hazard Signal
	thermometer	30	Thermometer

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AmicCmAttFunctionType			
Type	Name	Value / Type	Description
	steering	31	Steering
	seatOccupation	32	Seat Occupation
	odometer	33	Odometer
	tripCounter	35	Trip counter
	airbag	36	Air bag
	indicator	37	Warning indicator
	driverID	38	Driver ID
	rainSensor	39	Rain Sensor
	sunSensor	40	Sun Sensor value
	washingLiquid	41	Washing Liquid
	engineStartDisable	48	Engine Start Disable
	remoteStart	49	Remote Start
	performanceMode	50	Performance Mode
	coolantTemperature	51	Coolant Temperature
	engineRPM	52	Engine RPM
	engineOilPressure	53	Engine Oil Pressure
	engineOilTemperature	54	Engine Oil Temperature
	gearPosition	55	Gear Position
	prndlPosition	56	PRNDL Position
	cruiseControlState	57	Cruise Control State
	brakeFluidLevState	58	Brake Fluid Level State
	diagUnit	64	Diagnostic unit
	cd	80	CD (Compact Disc) player
	md	81	Mini Disc player
	dvdVideo	82	DVD video player
	dvdAudio	83	DVD audio player
	mp3	84	MP3 Player
	audioCassette	85	Audio cassette Player
	vcr	86	VCR Player
	amFmTuner	87	AM/FM radio tuner
	xmTuner	88	XM radio tuner
	tvTuner	89	TV tuner
	monitor	90	Monitor
	amplifier	111	Amplifier
	navigationUnit	112	Navigation unit
	phone	128	Phone
	textDisplay	144	Text display
	keyboard	145	Keyboard
	remoteController	146	Remote controller
	voiceUnit	147	Voice interface unit
	pda	160	PDA

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.12 Disconnect Source

This message is a command to disconnect a source from a channel.

Supported Messages
Class = Management class
Object = Disconnect source

Name	Operator	Type	Class	Object	Parameter
AmicMnCmdDisconnectSrc	Cmd	'100'B	'02'H	'0D'H	Command
AmicMnCnfDisconnectSrc	Cnf	'011'B	'02'H	'0D'H	Confirm

Parameter Definition

Command Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	sourceId	AmicMnAttFunctionalModule	Identification with Function type and instance number
	chanId	INTEGER (0..63)	channel ID to be disconnected with source

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttFunctionalModule			
Type	Name	Value / Type	Description
SEQUENCE	functionType	AmicCmAttFunctionType	Function type
	instanceNumber	INTEGER (0..15)	Instance Number (0 is assigned for anycast, and 15 is for broadcast)

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.13 Connect Sink

This message is a command to connect a sink to a channel.

Supported Messages
Class = Management class
Object = Connect sink

Name	Operator	Type	Class	Object	Parameter
AmicMnCmdConnectSink	Cmd	'100'B	'02'H	'0E'H	Command
AmicMnCnfConnectSink	Cnf	'011'B	'02'H	'0E'H	Confirm

Parameter Definition

Command Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	sinkId	AmicMnAttFunctionalModule	Identification with Function type and instance number
	chanId	INTEGER (0..63)	Channel ID to be connected to sink

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttFunctionalModule			
Type	Name	Value / Type	Description
SEQUENCE	functionType	AmicCmAttFunctionType	Function type
	instanceNumber	INTEGER (0..15)	Instance Number (0 is assigned for anycast, and 15 is for broadcast)

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.14 Disconnect Sink

This message is command to disconnect a sink from a channel.

Supported Messages
Class = Management class
Object = Disconnect sink

Name	Operator	Type	Class	Object	Parameter
AmicMnCmdDisconnectSink	Cmd	'100'B	'02'H	'0F'H	Command
AmicMnCnfDisconnectSink	Cnf	'011'B	'02'H	'0F'H	Confirm

Parameter Definition

Command Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	sinkId	AmicMnAttFunctionalModule	Identification with Function type and instance number
	chanId	INTEGER (0..63)	channel ID to be disconnected from a sink

AmicMnAttFunctionalModule			
Type	Name	Value / Type	Description
SEQUENCE	functionType	AmicCmAttFunctionType	Function type
	instanceNumber	INTEGER (0..15)	Instance Number (0 is assigned for anycast, and 15 is for broadcast)

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.15 Select Sink

This message is to get a current selected sink ID (Instance Number) for audio arbitration.

Supported Messages
Class = Management class
Object = Select Sink

Name	Operator	Type	Class	Object	Parameter
AmicMnInqSelectSink	Inq	'000'B	'02'H	'13'H	N/A
AmicMnRptSelectSink	Rpt	'001'B	'02'H	'13'H	Report
AmicMnSetSelectSink	Set	'010'B	'02'H	'13'H	Set
AmicMnCnfSelectSink	Cnf	'011'B	'02'H	'13'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
	sinkId	AmicMnAttFunctionalModule	Function type and instance number of sink

Set Parameter(s)			
Type	Name	Value / Type	Description
	sinkId	AmicMnAttFunctionalModule	Function type and instance number of sink

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttFunctionalModule			
Type	Name	Value / Type	Description
SEQUENCE	functionType	AmicCmAttFunctionType	Function type
	instanceNumber	INTEGER (0..15)	Instance Number (0 is assigned for anycast, and 15 is for broadcast)

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.16 Current Time and Date

This message is to get current time and date. The time is set as each time zone.

Supported Messages
Class = Management class
Object = Time and date

Name	Operator	Type	Class	Object	Parameter
AmicMnInqTimeDate	Inq	'000'B	'02'H	'14'H	N/A
AmicMnRptTimeDate	Rpt	'001'B	'02'H	'14'H	Report
AmicMnSetTimeDate	Set	'010'B	'02'H	'14'H	Set
AmicMnCnfTimeDate	Cnf	'011'B	'02'H	'14'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	hours	INTEGER(0..23)	Hours
	minutes	INTEGER(0..59)	Minutes
	secs	INTEGER(0..59)	Seconds
	year	INTEGER(0..255)	Years (Offset is 2000)
	month	INTEGER(1..12)	Months
	day	INTEGER(1..31)	Days
	tzone	INTEGER(0..47)	Time-Zone [0 is UTC 0H00, 1 is UTC 0H30 (00:30)]

Set Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	hours	INTEGER(0..23)	Hours
	minutes	INTEGER(0..59)	Minutes
	secs	INTEGER(0..59)	Seconds
	year	INTEGER(0..255)	Years (Offset is 2000)
	month	INTEGER(1..12)	Months
	day	INTEGER(1..31)	Days
	tzone	INTEGER(0..47)	Time-Zone [0 is UTC 0H00, 1 is UTC0H30(00:30)]

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.17 Vehicle Location Information

This message is to get GPS information; date, time, latitude, longitude, velocity, direction.

Supported Messages
Class = Management class
Object = GPS information

Name	Operator	Type	Class	Object	Parameter
AmicMnInqGPSInfo	Inq	'000'B	'02'H	'15'H	N/A
AmicMnRptGPSInfo	Rpt	'001'B	'02'H	'15'H	Report
AmicMnCnfGPSInfo	Cnf	'011'B	'02'H	'15'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	year	INTEGER(0..255)	Year (Offset is 2000)
	month	INTEGER(1..12)	Months
	day	INTEGER(1..31)	Days
	hours	INTEGER(0..23)	Hours (UTC Time)
	minutes	INTEGER(0..59)	Minutes
	secs	INTEGER(0..59)	Seconds
	latitudeZone	INTEGER(0..1)	0 is North, 1 is South
	latitudeDegree	INTEGER(0..90)	Degree
	latitudeMinute	INTEGER(0..59)	Minute
	latitudeSubMinute	INTEGER(0..9999)	1/10000 Minute
	longitudeZone	INTEGER(2..3)	2 is East, 3 is West
	longitudeDegree	INTEGER(0..179)	Degree
	longitudeMinute	INTEGER(0..59)	Minute
	longitudeSubMinute	INTEGER(0..9999)	1/10000 Minute
	velocity	INTEGER(0..255)	km/hour
	direction	INTEGER(0..359)	Degree (0 is North, and clock wise)

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.18 Simple Data Transfer

This message is a request to transfer (read) a portion of data from a responder to a requester. It is possible to receive multiple Receive messages for a single read request. The maximum data size to be transferred for a single request is 256k bytes.

Supported Messages
Class = Management class
Object = Simple data transfer

Name	Operator	Type	Class	Object	Parameter
AmicMnInqSimpleDataTransfer	Inq	'000'B	'02'H	'15'H	Inquire
AmicMnRptSimpleDataTransfer	Rpt	'001'B	'02'H	'15'H	Report
AmicMnSetSimpleDataTransfer	Set	'010'B	'02'H	'15'H	Set
AmicMnCnfSimpleDataTransfer	Cnf	'011'B	'02'H	'15'H	Confirm

Parameter Definition

Inquire Parameter(s)			
Type	Name	Value / Type	Description
	DataId	INTEGER (0..255)	Data ID

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	dataId	INTEGER (0..255)	Data ID
	totalFrameNum	INTEGER (0..255)	Number of total frames included during whole data transfer. for a single request. Offset is +1.
	size	INTEGER(0..1023)	Byte size included in this message frame
	data	OCTET STRING	Data

Set Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	dataId	INTEGER (0..255)	Data ID
	totalFrameNum	INTEGER (0..255)	Number of total frames included during whole data transfer. for a single request. Offset is +1.
	size	INTEGER(0..1023)	Byte size included in this message frame
	data	OCTET STRING	Data

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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4.19 Network Command (Boot, Wakeup, Shutdown)

This message is a command from the system management master to initiate a network boot sequence, wakeup, or shut down.

Supported Messages
Class = Management class
Object = Network Command

Name	Operator	Type	Class	Object	Parameter
AmicMnCmdNetCmd	Cmd	'000'B	'02'H	'16'H	Command
AmicMnCnfNetCmd	Cnf	'011'B	'02'H	'16'H	Confirm

Parameter Definition

Command Parameter(s)			
Type	Name	Value / Type	Description
	command	AmicMnAttNetCmd	Data ID

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicMnAttError	Error Status

AmicMnAttNetCmd			
Type	Name	Value / Type	Description
ENUMERATED	shutDown	0	Put the network in a sleep state
	initateBoot	1	
	wakeup	2	Cause the devices on the network to become active

AmicMnAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request successful without error.
	unspecifiedError	1	Error, which impossible to identify.
	notSupported	2	Incoming request not supported.
	noResource	3	No other resources to be allocated

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5 Core Messages

5.1 Vehicle Identification Number

This message is to get Vehicle Identification Number.

Supported Messages
Class = Core class
Object = Core VIN

Name	Operator	Type	Class	Object	Parameter
AmicCoInqVIN	Inq	'000'B	'01'H	'01'H	N/A
AmicCoRptVIN	Rpt	'001'B	'01'H	'01'H	Report
AmicCoCnfRptVIN	Cnf	'011'B	'01'H	'01'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
	vin	OCTET STRING(SIZE(17))	Vehicle Identification Number. These are ASCII expression

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicCoAttError	Confirm error status

AmicCoAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request success
	unspecifiedError	1	Unspecified error happened
	notSupported	2	Request not supported
	busy	3	Changing state

5.2 Manufacturer, Model and Model Year

This message is to get make and model of the vehicle.

Supported Messages
Class = Core class
Object = Core MakeModel

Name	Operator	Type	Class	Object	Parameter
AmicCoRptMakeModel	Rpt	'001'B	'01'H	'02'H	Report
AmicCoCnfMakeModel	Cnf	'011'B	'01'H	'02'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	make	OCTET STRING(SIZE(32))	Free text and the final character shall be NULL.
	model	OCTET STRING(SIZE(32))	Free text and the final character shall be NULL.)
	modelYear	OCTET STRING(SIZE(4))	Model year(4)

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Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicCoAttError	Confirm error status

AmicCoAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request success
	unspecifiedError	1	Unspecified error happened
	notSupported	2	Request not supported
	busy	3	Changing state

5.3 Manufacturing Date and Location

This message is to get the date and location that the vehicle was manufactured.

Supported Messages
Class = Core class
Object = Core ManuInfo

Name	Operator	Type	Class	Object	Parameter
AmicCoRptManuInfo	Rpt	'001'B	'01'H	'03'H	Report
AmicCoCnfManuInfo	Cnf	'011'B	'01'H	'03'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	manufacturerLocation	OCTET STRING(SIZE(32))	Free text and the final character shall be NULL.
	manufactureDate	OCTET STRING (SIZE(8))	Year (4), Month (2), Day (2), “00” means not available for month and day

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicCoAttError	Confirm error status

AmicCoAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request success
	unspecifiedError	1	Unspecified error happened
	notSupported	2	Request not supported
	busy	3	Changing state

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5.4 Language

This message is to get language code.

Supported Messages
Class = Core class
Object = Core, Language

Name	Operator	Type	Class	Object	Parameter
AmicCoInqLanguage	Inq	'000'B	'01'H	'04'H	N/A
AmicCoRptLanguage	Rpt	'001'B	'01'H	'04'H	Report
AmicCoSetLanguage	Set	'010'B	'01'H	'04'H	Set
AmicCoCnfLanguage	Cnf	'011'B	'01'H	'04'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
	languageCode	OCTET STRING(SIZE(2))	ISO 639 Language Code

Set Parameter(s)			
Type	Name	Value / Type	Description
	languageCode	OCTET STRING(SIZE(2))	ISO 639 Language Code

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicCoAttError	Confirm error status

AmicCoAttError			
Type	Name	Value / Type	Description
ENUMERATED	noError	0	Request success
	unspecifiedError	1	Unspecified error happened
	notSupported	2	Request not supported
	busy	3	Changing state

NOTE:

ISO 639 Language Codes (2 byte character)					
en = English	es = Spanish	fr = French	it = Italian	de = German	ja = Japanese
zh = Chinese	ru = Russian	pt = Portuguese	ko = Korean	el = Greek	sv = Swedish
nl = Netherlands					

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5.5 Vehicle Description

Supported Messages
Class = Core class
Object = Core VehDesc

Name	Operator	Type	Class	Object	Parameter
AmicCoInqVehDesc	Inq	'000'B	'01'H	'05'H	N/A
AmicCoRptVehDesc	Rpt	'001'B	'01'H	'05'H	Report
AmicCoCnfVehDesc	Cnf	'011'B	'01'H	'05'H	Confirm

Parameter Definition

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	unitType	AmicCoAttUnitType	Displayed Unit Type (metric/English)
	numDoors	INTEGER(1..15)	Number of doors
	doorCloseCapability	AmicCoAttDoorClosedCap	The capability of the vehicle to explicitly report the status of the doors, e.g. closed or ajar.
	doorLockedCapability	AmicCoAttDoorLockedCap	The capability of the vehicle to explicitly report the status of the doors, e.g. locked or unlocked.
	doorLockingCapability	AmicCoAttDoorLockingCap	The capability of the vehicle to explicitly command a change in the status of the doors, e.g. to lock or unlock.
	numSeats	INTEGER(1..31)	Number of seats
	seatConf	AmicCoAttSeatConf	The location of the seats in the vehicle
	seatCapability	AmicCoAttSeatCap	The capabilities of controllable seats.
	numWindows	INTEGER(1..15)	Number of windows (not include sunroof)
	controlledWindows	AmicCoAttWindowControlCap	The configuration of windows in the vehicle that may be controlled.
	windowPosition-Capability	AmicCoAttWindowPosCap	The capability of the vehicle to report window position information.
	wSWashLiquid-Capacity	INTEGER(0..128)	The capacity of the windshield washing liquid tank. 1 bit = .1 liters
	rWWashLiquid-Capacity	INTEGER(0..128)	The capacity of the rear window's washing liquid tank. 1 bit = .1 liters
	headLmpWashLiquid-Capacity	INTEGER(0..128)	The capacity of the headlamp wash liquid tank. 1 bit = .1 liters

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Report Parameter(s)			
Type	Name	Value / Type	Description
	numWheels	INTEGER(0..64)	The total number of wheels on the vehicle
	numMirrors	INTEGER (1..4)	Number of mirrors
	mirrorDescription	AmicCoAttMirrorDescr	Describes the limits of motion and presence of photochromic coating

Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	interiorLightCapability	AmicCoAttLightsDescr	Describes the vehicle's capability to control or report the status of the interior lights.
	exteriorLightCapability	AmicCoAttLightsDescr	Describes the vehicle's capability to control or report the status of the exterior lights.
	engineID	OCTET STRING(SIZE(64))	The manufacturer's name for the engine
	engineType	AmicCoAttEngType	SI, diesel, electric, hybrid, etc
	numCylinders	INTEGER(1..16)	The number of engine cylinders
	engineDisplacement	INTEGER(0..10,000)	in Cubic Centimeters (cc)
	engRatedPower	INTEGER(0..512)	In kilowatts (kW)
	cruiseControlType	AmicCoAttCruiseType	None, standard, adaptive, speed governor
	numGears	INTEGER(0..31)	Number of gears
	numSunroofs	INTEGER(0..7)	Number of sunroofs
	transType	AmicCoAttTransType	Transmission type
	abs	AmicCoAttAbs	ABS type
	tracCntrlPresent	BOOLEAN	Traction Control present=1, not present=0
	varSuspPresent	BOOLEAN	Variable Suspension present=1, not present=0
	vehicleAntitheft	AmicCoAttVehAntiTheft	Availability of vehicle anti-theft function (e.g. immobilizer)
	contentTheft	AmicCoAttContentAntiTheft	Availability of content anti-theft function (glass breakage sensor)
	doorLockServ	AmicCoAttDoorLockServ	manual, automatic,
	convertible	AmicCoAttCnvrtType	Convertible type
	fuelCapacityTank1	INTEGER(0..4095)	Fuel capacity (0.1/bit liter) for the primary tank
	fuelCapacityTank2	INTEGER(0..4095)	Fuel capacity (0.1/bit liter) for the secondary tank. If only one tank, this is set to '0'.

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Report Parameter(s)			
Type	Name	Value / Type	Description
SEQUENCE	fuelType	AmicCoAttFuelType	The type of fuel the customer puts into the vehicle.
	vehicleLength	INTEGER (0..255)	0.1 m / 1 bit
	vehicleWidth	INTEGER (0..255)	0.1 m / 1 bit
	vehicleHeight	INTEGER (0..255)	0.1 m / 1 bit
	vehicleWeight	INTEGER (0..255)	100 kg / 1 bit
	wheelDriveType	AmicCoAttWheelDriveType	Wheel drive type
	steeringWheelLocation	AmicCoAttSteeringWheel-Location	Steering wheel location
	sysVolt	AmicCoAttSysVolt	System voltage
	tireMonitoringSystem	AmicCoAttTireMonSys	Tire monitoring system availability
	oBDRegionVariant	AmicCoAttOBDRgVar	The OBD Code Regional Variant
	implementedWarning-Lights	AmicCoAttImplemented-WarningLights	A bit string indicating the warning lights implemented in the vehicle

Confirm Parameter			
Type	Name	Value / Type	Description
	errorStatus	AmicCoAttError	Confirm error status

AmicCoAttUnitType			
Type	Name	Value / Type	Description
BIT STRING	displayUnitsSpeed	0	0=Metric, 1=English
	displayUnitsDistance	1	0=Metric, 1=English
	displayUnitsVolume	2	0=Metric, 1=English
	displayUnitsTemp	3	0=Metric, 1=English

AmicCoAttDoorLockingCap			
Type	Name	Value / Type	Description
ENUMERATED	none	0	No capability to change the door locked/unlocked status
	other	1	Another service describes the set of doors for which there is explicit locking capability
	driverDoorExplicit	2	The vehicle is capable of explicit locking and unlocking for the driver door. All other doors are combined.
	allDoorsExplicit	3	The vehicle is capable of providing explicit locking and unlocking for each door.

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AmicCoAttSeatConf			
Type	Name	Value / Type	Description
BIT STRING	row1Left	0	0=Seat Not Present, 1=Seat Present
	row1Center	1	0=Seat Not Present, 1=Seat Present
	row1Right	2	0=Seat Not Present, 1=Seat Present
	row2Left	3	0=Seat Not Present, 1=Seat Present
	row2Center	4	0=Seat Not Present, 1=Seat Present
	row2Right	5	0=Seat Not Present, 1=Seat Present
	row3Left	6	0=Seat Not Present, 1=Seat Present
	row3Center	7	0=Seat Not Present, 1=Seat Present
	row3Right	8	0=Seat Not Present, 1=Seat Present
	row4Left	9	0=Seat Not Present, 1=Seat Present
	row4Center	10	0=Seat Not Present, 1=Seat Present
	row4Right	11	0=Seat Not Present, 1=Seat Present
	row5Left	12	0=Seat Not Present, 1=Seat Present
	row5Center	13	0=Seat Not Present, 1=Seat Present
	row5Right	14	0=Seat Not Present, 1=Seat Present

AmicCoAttSeatCap			
Type	Name	Value / Type	Description
SEQUENCE	position	AmicCoAttSeatPos	The location of the seat.
	tilt	AmicCoAttSeatCapability	The capability of the seat to control and/or report position for the specified item
	height	AmicCoAttSeatCapability	The capability of the seat to control and/or report position for the specified item
	forward	AmicCoAttSeatCapability	The capability of the seat to control and/or report position for the specified item
	lumbar	AmicCoAttSeatCapability	The capability of the seat to control and/or report position for the specified item
	numMemPos itions	INTEGER (0..10)	The number of memory positions supported for the seat.
	heater	BOOLEAN	0=Seat not equipped with heater, 1=Seat equipped with heater.

AmicCoAttSeatPos			
Type	Name	Value / Type	Description
ENUMERATED	row1Left	0	
	row1Center	1	
	row1Right	2	
	row2Left	3	
	row2Center	4	
	row2Right	5	
	row3Left	6	
	row3Center	7	
	row3Right	8	
	row4Left	9	
	row4Center	10	
	row4Right	11	
	row5Left	12	
	row5Center	13	
	row5Right	14	

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AmicCoAttSeatCapability			
Type	Name	Value / Type	Description
ENUMERATED	none	0	No capability to control the seat or report position
	controlOnly	1	Capability to control, but not to report position.
	positionOnly	2	Capability to report position, but not to control.
	controlAndPosition	3	Capability to control and to report position.

AmicCoAttMirrorDesc			
Type	Name	Value / Type	Description
SEQUENCE	position	AmicCoAttMirrorPos	The location of the mirror.
	leftLimit	INTEGER (-128..-1)	The capability of the seat to control and/or report position for the specified item
	rightLimit	INTEGER (1..127)	The capability of the seat to control and/or report position for the specified item
	upLimit	INTEGER (-128..-1)	The capability of the seat to control and/or report position for the specified item
	downLimit	INTEGER (1..127)	The capability of the seat to control and/or report position for the specified item
	photochromicCoated	BOOLEAN	0=False, 1=True

AmicCoAttMirrorPos			
Type	Name	Value / Type	Description
ENUMERATED	leftOutboard	0	
	rightOutboard	1	
	insideRearview	2	

AmicCoAttLightsDesc			
Type	Name	Value / Type	Description
ENUMERATED	none	0	No capability to control the lights or report status
	controlOnly	1	Capability to control the lights but not report status
	reportOnly	2	Capability to control the lights but not report status
	controlAndReport	3	Capability to control the lights and report status

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AmicCoAttEngType			
Type	Name	Value / Type	Description
ENUMERATED	sparkIgnition	0	Conventional gasoline engine
	diesel	1	
	electric	2	
	hybrid	3	
	other	4	

AmicCoAttCruiseType			
Type	Name	Value / Type	Description
BIT STRING	standard	1	Standard cruise control
	adaptive	2	Adaptive cruise control
	speedGovernor	3	Allows user to set max speed

AmicCoAttWindowControlCap			
Type	Name	Value / Type	Description
ENUMERATED	none	0	No capability to report the door locked/unlocked status
	other	1	Another service describes the set of doors for which there is explicit knowledge
	coupe	2	The vehicle is capable of controlling driver and passenger windows.
	sedan	3	The vehicle is capable of controlling driver, passenger, rear left and rear right windows.
	wagon	4	The vehicle is capable of controlling driver, passenger, rear left passenger, rear right passenger, and rear windows.

AmicCoAttWindowPosCap			
Type	Name	Value / Type	Description
BIT STRING	windowOpen	0	0=False, 1=True. The vehicle is capable of reporting that the window is completely open
	windowClosed	1	0=False, 1=True. The vehicle is capable of reporting that the window is completely closed
	generalWindowPosition	2	0=False, 1=True. The vehicle is capable of reporting intermediate window positions.

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AmicCoAttMirrorDescr			
Type	Name	Value / Type	Description
SEQUENCE	driverUpLimit	INTEGER(-255..0)	describes the maximum movement in the up direction of the driver's outside rearview mirror
	driverDownLimit	INTEGER(0..255)	describes the maximum movement in the down direction of the driver's outside rearview mirror
	driverLeftLimit	INTEGER(-255..0)	describes the maximum movement in the left direction of the driver's outside rearview mirror
	driverRightLimit	INTEGER(0..255)	describes the maximum movement in the right direction of the driver's outside rearview mirror
	driverPhotoChromic	BOOLEAN	True if the mirror has a photochromic surface
	passUpLimit	INTEGER(-255..0)	describes the maximum movement in the up direction of the passenger's outside rearview mirror
	passDownLimit	INTEGER(0..255)	describes the maximum movement in the down direction of the passenger's outside rearview mirror
	passLeftLimit	INTEGER(-255..0)	describes the maximum movement in the left direction of the passenger's outside rearview mirror
	passRightLimit	INTEGER(0..255)	describes the maximum movement in the right direction of the passenger's outside rearview mirror
	passPhotoChromic	BOOLEAN	True if the mirror has a photochromic surface
	insideRVUpLimit	INTEGER(-255..0)	describes the maximum movement in the up direction of the inside rearview mirror
	insideRVDownLimit	INTEGER(0..255)	describes the maximum movement in the down direction of the inside rearview mirror
	insideRVLeftLimit	INTEGER(-255..0)	describes the maximum movement in the left direction of the inside rearview mirror
	insideRVRightLimit	INTEGER(0..255)	describes the maximum movement in the right direction of the inside rearview mirror
	insideRVPhoto-Chromic	BOOLEAN	True if the mirror has a photochromic surface

AmicCoAttLightsDescr			
Type	Name	Value / Type	Description
ENUMERATED	noCntrlNoRpt	0	the lights cannot be controlled or their state reported
	ctrlNoRpt	1	the lights can be controlled but their state cannot be reported
	noCtrlRpt	2	the lights cannot be controlled but their state can reported
	ctrlRpt	3	the lights can be controlled and their state can be reported

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