
**Tractors and machinery for agriculture
and forestry — Serial control and
communications data network —**

**Part 1:
General standard for mobile data
communication**

*Tracteurs et matériels agricoles et forestiers — Réseaux de commande
et de communication de données en série —*

*Partie 1: Système normalisé général pour les communications de
données avec les équipements mobiles*



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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.

ISO 11783-1 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 19, *Agricultural electronics*.

ISO 11783 consists of the following parts, under the general title *Tractors and machinery for agriculture and forestry — Serial control and communications data network*:

- *Part 1: General standard for mobile data communication*
- *Part 2: Physical layer*
- *Part 3: Data link layer*
- *Part 4: Network layer*
- *Part 5: Network management*
- *Part 6: Virtual terminal*
- *Part 7: Implement messages application layer*
- *Part 8: Power train messages*
- *Part 9: Tractor ECU*
- *Part 10: Task controller and management information system data interchange*
- *Part 11: Mobile data element dictionary*
- *Part 12: Diagnostics services*
- *Part 13: File server*

Automated functions is to form the subject of a future part 14.

Introduction

ISO 11783 specifies a communications system for agricultural equipment based on the CAN 2.0 B ^[1] protocol. SAE J 1939 documents¹⁾, on which parts of ISO 11783 are based, were developed jointly for use in truck and bus applications and for construction and agriculture applications. Joint documents were completed to allow electronic units that meet the truck and bus SAE J 1939 specifications to be used by agricultural and forestry equipment with minimal changes. General information on ISO 11783 is to be found in this part of ISO 11783.

The purpose of ISO 11783 is to provide an open, interconnected system for on-board electronic systems. It is intended to enable electronic control units (ECUs) to communicate with each other, providing a standardized system.

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this part of ISO 11783 may involve the use of a patent concerning the controller area network (CAN) protocol referred to throughout the document.

ISO takes no position concerning the evidence, validity and scope of this patent.

The holder of this patent has assured ISO that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO. Information may be obtained from:

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Wernerstrasse 51
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D-70442 Stuttgart-Feuerbach
Germany

Attention is drawn to the possibility that some of the elements of this part of ISO 11783 may be the subject of patent rights other than those identified above. ISO shall not be held responsible for identifying any or all such patent rights.

1) Society of Automotive Engineers, Warrendale, PA, USA.

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Tractors and machinery for agriculture and forestry — Serial control and communications data network —

Part 1: General standard for mobile data communication

1 Scope

ISO 11783 as a whole specifies a serial data network for control and communications on forestry or agricultural tractors and mounted, semi-mounted, towed or self-propelled implements. Its purpose is to standardize the method and format of transfer of data between sensors, actuators, control elements, and information-storage and -display units, whether mounted on, or part of, the tractor or implement. It is intended to provide open system interconnect (OSI) for electronic systems used by agricultural and forestry equipment. This part of ISO 11783 gives a general overview of ISO 11783. Its annexes contain the identifiers for messages, addresses, control functions, implements and manufacturers, required for the implementation of a compliant network.

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 11783 (all parts), *Tractors and machinery for agriculture and forestry — Serial control and communications data network*

ISO 11898-1, *Road vehicles — Controller area network (CAN) — Part 1: Data link layer and physical signalling*

ISO 11898-2, *Road vehicles — Controller area network (CAN) — Part 2: High-speed medium access unit*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

active mask

collection of display elements selected by a working set for display on a virtual terminal

NOTE An active mask may or need not be visible.

3.2

address

eight-bit field used to define the source or destination of a message

3.3

alarm mask

object that defines alarm information for display on a virtual terminal

3.4

auxiliary input unit

electronic control unit providing auxiliary controls for common use

NOTE These may be physically located on the virtual terminal.

3.5

bridge

electronic control unit interconnecting two ISO 11783 network segments that stores and forwards messages between the two or more network segments

NOTE 1 This permits changes of media, the electrical interface, and data rate between segments, but the data link protocol and address space are the same on both connections of a bridge.

NOTE 2 A bridge can selectively filter messages going across it so that the network load is minimized on each segment.

3.6

coding data

data that changes infrequently, such as machine or chemical data, or that does not vary from task to task

3.7

command configurable address

source address of a control function that can be altered using the command address message during normal operations

3.8

control function

function that performs operations to complete a specific function on or within devices

NOTE A control function has one unique address on the network.

3.9

data dictionary

listing of data variables and their identifiers

NOTE The data dictionary is defined in ISO 11783-11.

3.10

data dictionary entity

process data variable data dictionary identifier, definition, value range, value resolution and units specifications

3.11

data dictionary identifier

16-bit number that uniquely identifies a data dictionary entity

NOTE The data dictionary identifier is used in the process data message to identify the data dictionary entity for which a value or command is communicated.

3.12

data page

bit in the identifier portion of the CAN arbitration field used to select one of two pages of parameter group numbers

3.13

data transfer file

generic term for files in the extensible markup language format, which are used for the data transfer between the farm management information system and the task controller of an ISO 11783 network

3.14**destination address****DA**

protocol data unit-specific field in the CAN identifier used to indicate the address of the intended receiver of the CAN message

3.15**device**

mechanical system such as tractor, trailer or implement, or an independent sensor system

3.16**device element**

any addressable item on a device

EXAMPLE Nozzle on sprayer boom where the nozzle has individually addressable process data variables.

3.17**display**

part of a virtual terminal that presents visible information to an operator

3.18**electronic control unit****ECU**

electronic item consisting of a combination of basic parts, subassemblies and assemblies packaged together as a physically independent entity

EXAMPLE Function controller, network interconnect unit or virtual terminal.

3.19**equipment**

device or machine that performs a specific field operation

NOTE It can be a tractor or an implement attached to a tractor or self-propelled machine.

3.20**farm management information system****FMIS**

office computer system used by a farmer or contractor that includes the software for farm management such as book keeping, payroll, resource management for machines, products, workers, field management, geographical information system, decision support systems and task management

3.21**field**

one or more partfields

NOTE The field is only of importance within the farm management information system for business management considerations and is not necessarily related to a single crop.

3.22**function**

action or activity by which equipment fulfils one of its intended purposes

3.23**gateway**

electronic control unit that permits data to be transferred between two networks with different protocols or message sets

NOTE A gateway provides a means to repackage parameters into new message groups when transferring messages from one network to another.

3.24

grid cell

rectangular areas defined by overlaying a grid on a partfield

3.25

group extension

protocol data unit-specific field that is used as part of the information necessary to determine the parameter group number

3.26

implement

device or machine that performs a specific operation and which is normally attached to a tractor

3.27

industry group

IG

allocation of devices and their functions used by a specific industry

3.28

initial address

source address of a control function in a self-configuring electronic control unit that is determined during initial power up of the ECU and which is used on the subsequent power up

3.29

machine

device that uses or applies mechanical power, which has a definite function and which performs a specific kind or kinds of work

3.30

management computer gateway

electronic control unit that interfaces to the management computer system and to the ISO 11783 network

NOTE A management computer gateway can store data for transmission at a later time.

3.31

mask

top-level object that contains other objects for display on the virtual terminal

3.32

media

physical entity that conveys the electrical transmission (or equivalent means of communication) between ECUs on the network

NOTE ISO 11783 media consists of quad-twisted copper wires.

3.33

message

one or more CAN data frames with the same parameter group number

NOTE The information related to a single parameter group number to be transferred on the network can take several CAN data frames.

3.34

mobile implement control system

devices that are coupled together by, and that use, the ISO 11783 network

3.35

multi-packet message

message used when more than one CAN data frame is required to transmit all data specific to a given parameter group number

NOTE Each CAN data frame has the same CAN identifier but contains different data in each packet.

3.36**NAME**

eight-byte entity which provides an indication of each control function of an ECU

NOTE The NAME is used to provide a description of the control function and to provide a numerical value that can be used for arbitration of conflicting addresses.

3.37**negative-acknowledgement**

response to a message that indicates that it has not been understood or that a requested action cannot be performed

3.38**network interconnection unit**

electronic control unit used for interconnecting networks or network segments

NOTE Specific implementations for forwarding messages include repeaters, bridges, routers and gateways.

3.39**node**

physical connection of an ECU to the network

3.40**non-configurable address**

source address of a control function that can not be altered by any means

3.41**object pool**

collection of objects that define the operator interface, user interface or device description for an implement or single working set

NOTE A complete virtual terminal interface is composed of one or more object pools — one for each implement or working set.

3.42**packet**

single CAN data frame of a multi-frame message

NOTE This can also be a message if the data content to be transferred is in one CAN data frame.

3.43**parameter group****PG**

identification of the data in a single-packet or multi-packet message

NOTE 1 Parameter groups are not dependent on the source address field allowing any source to send any parameter group.

NOTE 2 Parameter groups include data, commands, requests, acknowledgments, and negative-acknowledgments.

NOTE 3 See Annex A for parameter group assignments.

3.44**parameter group number**

three-byte or 24-bit representation of the data page, protocol data unit format and group extension fields that identifies a particular parameter group

3.45**partfield**

area characterized by the cultivation of only one agricultural crop

NOTE Partfield is the XML element to which tasks are allocated to obtain smallest granularity.

3.46

PDU format

eight-bit field in the 29-bit CAN identifier that identifies the format of the protocol data unit

NOTE It is also one of the fields used to determine the parameter group number that labels the data field of the CAN data frame.

3.47

PDU specific

PS

eight-bit field in the 29-bit CAN identifier that is either a destination address or group extension

3.48

PDU1 format

protocol data unit format used for messages which are to be sent to a destination address

NOTE The protocol data unit-specific field contains the destination address (specific or global).

3.49

PDU2 format

protocol data unit format used to send information by the group extension technique

NOTE The protocol data unit specific field contains the group extension.

3.50

preferred address

source address of a control function in electronic control units that cannot be changed after device configuration

NOTE Control functions with preferred address are listed in Annex C.

3.51

pixel

smallest addressable picture element on a virtual terminal display

3.52

polygon

planar surface, defined by one exterior boundary, and by zero or more interior boundaries

NOTE 1 Each interior boundary describes a hole in the surface.

NOTE 2 A single or group of polygons can be used to define a treatment zone.

3.53

priority

three-bit field in the CAN identifier that establishes the arbitration priority of the information communicated

NOTE The highest priority is zero and the lowest priority is seven.

3.54

process data message

message used for the transmission of measured data and/or set point commands to one or more control functions

3.55

process data variable

information unit that describes an individual characteristic

NOTE Process data variables consist of the attributes range, resolution and units, as defined in the data dictionary.

3.56

protocol data unit

PDU

ISO 11783-specific CAN data frame

3.57

repeater

electronic control unit that regenerates the data signal to and from another network segment, permitting more electrical loads (i.e. ECU) to be connected or connection to another type of media (physical layer expansion)

NOTE The data rate, protocol and address space are the same on both sides of the repeater.

3.58

router

electronic control unit that connects network segments with independent address space, data rates and media, but which has the same protocol across all network segments

NOTE A router permits a tractor or an implement to appear as a single ECU to other network segments.

3.59

segment

portion of the network using the same physical media

NOTE 1 There is only one path between any two nodes and the data transmitted by any node are available to all other nodes connected to the same segment.

NOTE 2 Multiple segments are connected together by network interconnect units, including gateways, repeaters, bridges and routers.

3.60

self-configurable address

source address of a control function, determined by internal calculations during initial power up of the electronic control unit, which ECU then claims as that address on the network

3.61

service-configurable address

source address of a control function that is changed in operational service mode by using a service tool and any of a number of proprietary techniques, or by using the commanded-address message

3.62

soft key mask

object that contains key data for display on a virtual terminal

3.63

source address

SA

eight-bit field in the 29-bit CAN identifier that provides for the unique identification of the source of a message

NOTE The source address field contains the address of the control function that is sending the message.

3.64

subnetwork

specific ISO 11783 network segment when multiple segments are used on a device

NOTE 1 Subnetworks can include tractor, implement, hydraulic auxiliary valves and braking system.

NOTE 2 Collectively, the subnetworks are the ISO 11783 system network.

3.65

task

execution or performance of work on one partfield, for one farm or for one customer

NOTE 1 An operator can activate one task that contains process data variable values for one or more working sets.

NOTE 2 A maximum of one task can be active at the one time on a single task controller.

3.66

task controller

electronic control unit on the mobile implement control system that is responsible for the sending, receiving and logging of process data

3.67

terminating bias circuit

TBC

circuit required at each end of an ISO 11783 network segment that provides bias voltages for the CAN_H and CAN_L signals and the common mode impedance termination for the respective conductors

3.68

tractor

machine that is the primary source of power in a connected system

NOTE 1 A connected system consists of a tractor and can include one or more implements.

NOTE 2 Self-propelled agricultural equipment or construction equipment include a primary source of power.

3.69

treatment zone

area to be treated with a constant value of one or more process data variables

NOTE A treatment zone can consist of several grid cells or a polygon with the same treatment parameters.

3.70

vehicle

machine for the transportation of goods and people on land

3.71

virtual terminal

VT

electronic control unit consisting of a graphical display and input controls providing the capability to display information to and retrieve data from an operator for a connected implement or working set

3.72

visible mask

active data or alarm mask that is visible on the display of the virtual terminal

3.73

working set

group of NAMEs in one or more ECUs that collectively provide a control function or group of control functions

NOTE All control functions that are part of a working set, whether or not they are in separate electronic control units, are identified as members by the working-set master.

3.74**working-set master**

coordinator of the communications of a working set

NOTE 1 The source address of the working-set master is used to identify the working set and, for others, to communicate with the working set.

NOTE 2 The working-set master is identified by a specific control function within a specific electronic control unit.

3.75**XML element**

element representing an object of the real world

NOTE The extensible markup language element is characterized by a specific name and a definition. It contains several extensible markup language attributes, each with a name and a definition.

4 Abbreviated terms

ADIS	agriculture data interface syntax	P	page
AID	attribute identifier	PDU	protocol data unit
BMG	bit mapped graphics	PF	PDU format
BNF	Backus-Naur format	PG	parameter group
CAN	controller area network	PGN	parameter group number
DA	destination address	Pri	priority
DID	device identifier	PS	PDU specific
DTD	document type definition	PS_DA	PDU Specific_Destination Address
DP	data page	PS_GE	PDU Specific_Group Extension
DTF	data transfer file	PTO	power take-off
ECU	electronic control unit	R	reserved
FMIS	farm management information system	RAM	random access memory
GE	group extension	RTB	request to broadcast
GIS	geographical information system	SA	source address
GPS	global positioning system	SLOT	scaling, limits, offset and transfer function
IDn	identification	SPN	suspect parameter number
IDr	identifier	SRR	substitute remote request
IDE	identifier extension bit	TBC	terminating bias circuit
IDN	identification number	Un	undefined
IG	industry group	UTC	coordinated universal time
LSB	least significant byte or least significant bit	VT	virtual terminal
MICS	mobile implement control system	WU	world units
MSB	most significant byte/most significant bit	XML	extensible markup language
NA	not allowed	XSD	XML schema definition
OEM	original equipment manufacturer		
OSI	open system interconnect		

5 Application of OSI model to ISO 11783

The open systems interconnection (OSI) specified in ISO 7498 is a model of computer communications architecture having seven layers, as shown in Figure 1 and specified below. It is intended that data communications networks such as the ISO 11783 network be developed to perform the functions of each of the OSI layers, as required.

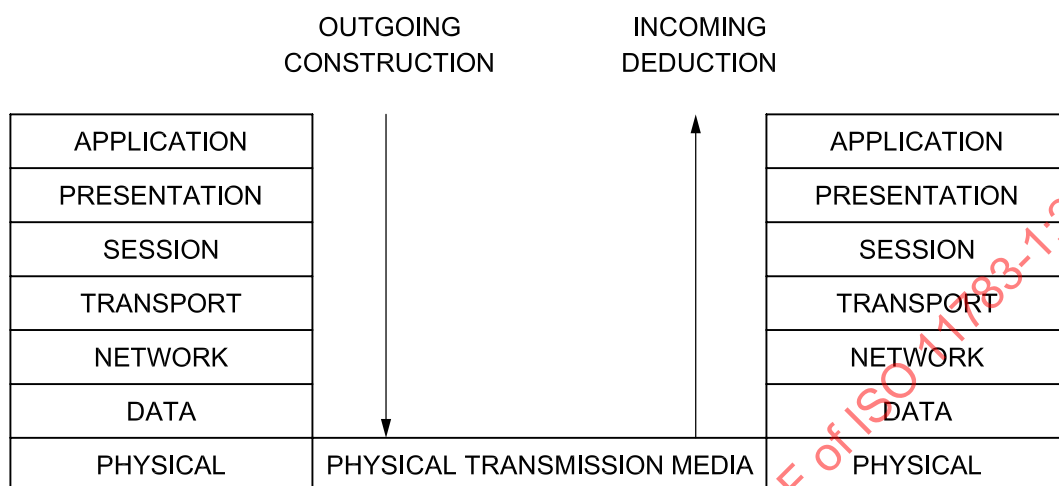


Figure 1 — OSI seven-layer model

Layer 1 — Physical

This layer concerns the transmission of an unstructured bit stream over physical media; it deals with the mechanical, electrical, functional and procedural characteristics for accessing the physical media.

Layer 2 — Data Link

This layer provides for the reliable transfer of information across the physical layer; it sends blocks of data with the necessary synchronization, error control, sequence control and flow control.

Layer 3 — Network

This layer provides upper layers with independence from the data transmission and switching technologies used to connect systems; it is responsible for establishing, maintaining and terminating connections.

Layer 4 — Transport

This layer provides for reliable, transparent transfer of data between end points, end-to-end error recovery and flow control, and segmentation and reassembly of very large messages.

Layer 5 — Session

This layer provides the control structure for communication between applications; it establishes, manages and terminates connections (sessions) between cooperating applications.

Layer 6 — Presentation

This layer provides independence to the application process from differences in data representation (syntax).

Layer 7 — Application

This layer provides access to the OSI environment for users and also provides distributed information services.

It is not required that any standard based on the model, including ISO 11783, be partitioned explicitly into the seven OSI layers, as long as the fundamental functionality is supported. Not all the OSI layers are required for the ISO 11783 network, because this network is a specific communications system, supporting specific sets of applications for a specific industry. Only those layers required for the anticipated use are defined in ISO 11783, with a separate part of ISO 11783 specifying each of the layers, and with other parts providing functionality support for the layers.

6 ISO 11783 network requirements

6.1 General

Most messages can be broadcast on an ISO 11783 network. Therefore, the data are transmitted on the network without directing it to a specific destination. This configuration permits any control function within an ECU to use the data without using additional request messages. ISO 11783 also specifies that a specific destination address be included within the CAN identifier of the message when a message is directed to a particular control function. The destination-specific message format is therefore different from the broadcast message format. Proprietary communication is also permitted in ISO 11783, using either destination-specific messages or broadcast message formats.

6.2 Physical layer

ISO 11783-2 specifies the physical layer of the data network. The network is composed of a single linear quad-twisted wire cable connected to each ECU at a node. A short cable lead provides a node connection to the quad-twisted wire cable for each ECU. Active terminating bias circuits are specified for each end of a network segment.

ISO 11783-2 also specifies the connectors required for connecting implements to tractors, additional ECUs to an existing network installed on equipment, and a service tool to the network.

ISO 11783-2 also specifies the power sources required for operation of the network and their connections.

A typical ISO 11783 control and communication data network is shown in Figure 2.

6.3 Data link layer

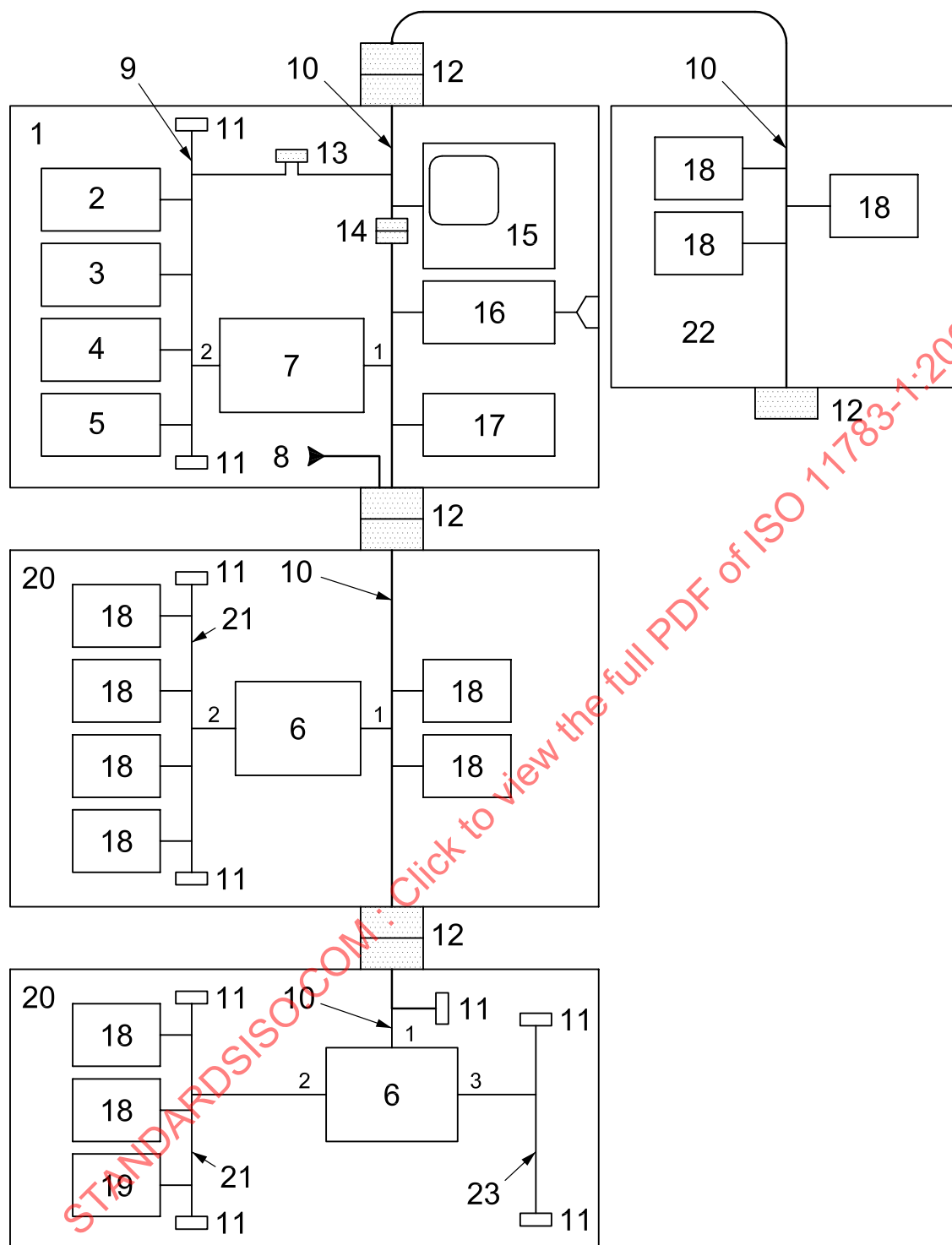
ISO 11783 networks use the CAN extended frame format defined in ISO 11898-1 and ISO 11898-2. ISO 11783-3 defines the structure of the CAN identifier for specifying the message formats.

The message formats or protocol data units are used to identify the content of a message. ISO 11783-3 specifies an eight-bit PDU format field, an eight-bit PDU specific field and a two-bit data page field that is used to identify a PDU. To reduce message overhead, ISO 11783-3 specifies that a number of related data items or parameters are to be grouped together within a PDU.

ISO 11783 specifies additional messages for manufacturer proprietary messages.

Messages that need more than eight bytes of data are sent as multi-packet messages. ISO 11783-3 specifies a transport protocol for transmitting multi-packet messages.

Individual application message format definitions, including the message transmission rate, data frame length, data page, PF, PS or DA, and the default priority, are given in that part of ISO 11783 specifying the particular application.



Key

1 tractor	9 tractor network	17 task controller
2 engine	10 implement network	18 ECU
3 transmission	11 terminator	19 lighting controller
4 brakes	12 implement bus breakaway connector	20 rear-mounted or towed implement
5 hitch controller	13 diagnostic connector	21 ISO 11783 or other network
6 network interconnect unit	14 bus extension connector	22 front- or side-mounted implement
7 tractor ECU	15 virtual terminal	23 other standard's network
8 power input	16 management computer gateway	

NOTE Smaller numbers indicate parts on the interconnect units and tractor ECU.

Figure 2 —Typical tractor/implement network physical connection structure

6.4 Network layer

When two networks with different network architectures are connected, the integrator of the connected system shall use a network interconnect unit to isolate each network segment from the other. Network interconnect units are detailed in ISO 11783-4. It is also possible that complex systems could require more than the 30-node electrical limit, as specified in ISO 11783-2, on an ISO 11783 network. In these cases, the manufacturer of the implement system shall use network interconnect units to maintain required network electrical load limits.

6.5 Network management

Each control function communicating on the ISO 11783 data network requires a source address (SA). There can be a one-for-one relationship of source addresses with ECUs and control functions on the network. If an ECU performs more than one control function, an address is required for each control function.

To uniquely identify each control function, ISO 11783-5 specifies a 64-bit NAME. ISO 11783-5 defines the specific process for determining source addresses and for resolving any address conflicts that can occur. SA are either preset or dynamically claimed by each controller as it powers up.

A NAME shall be assigned to each control function that communicates on an ISO 11783 network. There are examples, such as a virtual terminal and management gateway in a common ECU, where multiple NAMES and addresses coexist within a single ECU. Annex C lists the preset or preferred addresses for non-specific control functions of the industries listed in Annex B. Annex D lists the assigned initial addresses for agriculture and forestry equipment. Annex E and F list the NAMES to be used by control functions on an ISO 11783 data network. Figure 3 illustrates the network topology with different control functions on a tractor and implement. The addresses used by the control functions are also illustrated.

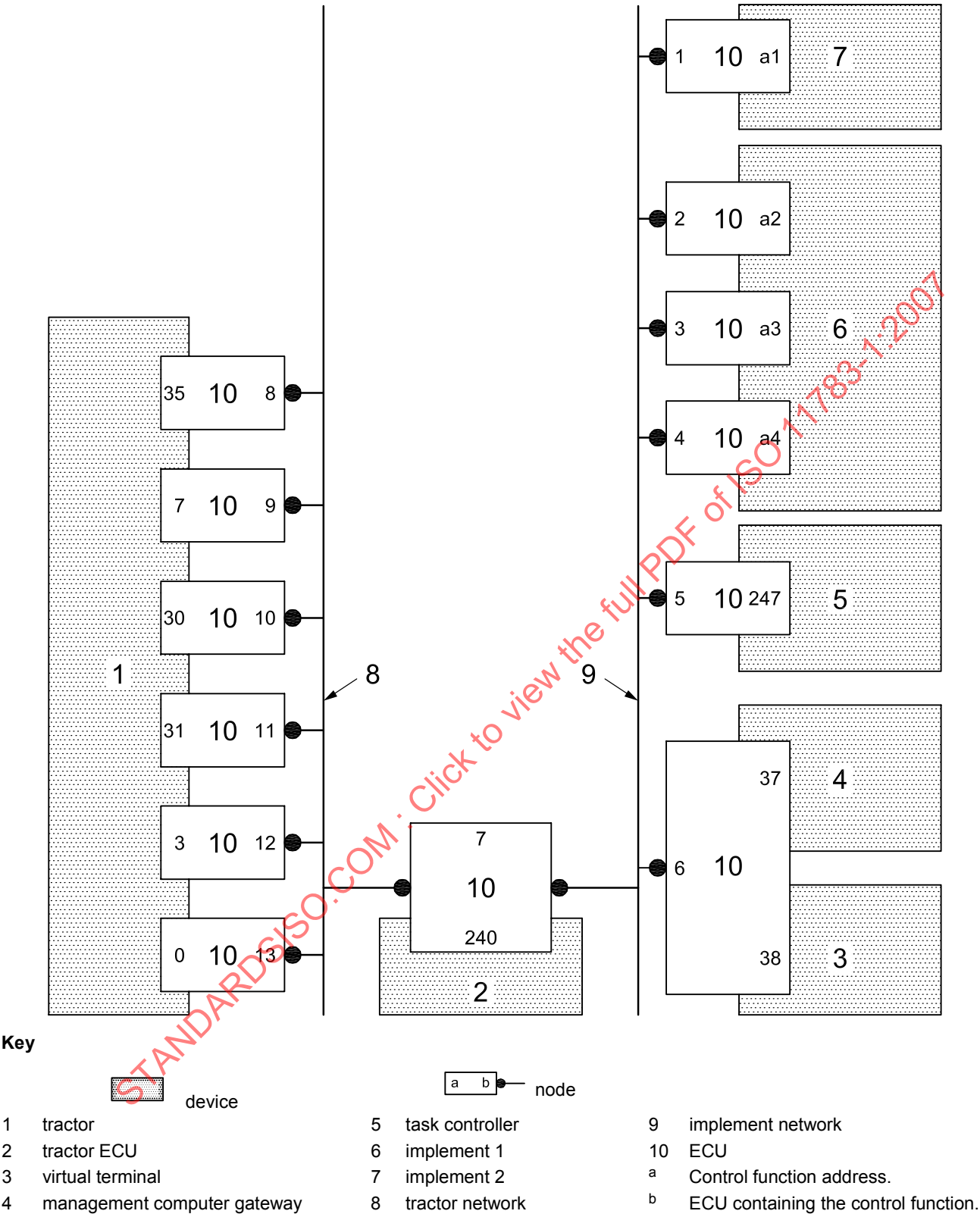
6.6 Network segments

6.6.1 General

ISO 11783 supports two or more network segments. One segment is identified as the tractor network. This segment is intended to provide the control and data communications for the drive train and chassis of the tractor or primary power unit in a system. The second segment is identified as the implement network that provides the control and data communications between implements, and between implements and the tractor or main power unit in the system. A tractor ECU is required to connect the tractor network and the implement network. Figure 3 illustrates the two network segments connected by a tractor ECU.

6.6.2 Tractor network

The tractor network provides the control and data communications between control functions on the drive train and chassis of the tractor. This network segment is controlled by the tractor manufacturer. It is recommended that the tractor network physical layer comply with ISO 11783-2. The tractor network is shown with respect to the implement network on the tractor in Figure 3. Both the tractor network and the implement network can be integrated on-board the tractor. It is intended that control functions not be connected to the tractor network unless consent is given by the tractor manufacturer. The tractor network may use application messages defined in ISO 11783-8 and ISO 11783-7 as well as proprietary messages specified in ISO 11783-3.



NOTE 1 a1, a2, a3, a4 are self-configurable addresses.

NOTE 2 The number in smaller type beside each node connection (or, in the case of the tractor ECU, above-centre between nodes) is the ECU containing the control function, while the number or numbers in smaller type opposite it is the function's address.

Figure 3 — Typical ISO 11783 network topology

6.6.3 Implement network

The implement network shall be designed to support communications between implements and between the tractor and implements. This network segment shall meet the applicable requirements of ISO 11783. The implement network exists on the tractor and on implements as shown in Figure 3. The implement network physical layer connectors shall comply with ISO 11783-2. Application messages for the implement network are defined in ISO 11783-7. Power train messages (see ISO 11783-8) may be used by control function addresses on the implement network.

6.6.4 Recommended configuration

It is recommended that the tractor network control functions use the preferred addresses listed in Annex C. The number of control functions used on connected implements shall be limited to the 119 addresses in the address range from 128 to 247 using self-configurable addresses. Practical limitations exist where multiple implements can be connected to the ISO 11783 network. Implement addresses shall be allocated using the process according to ISO 11783-5. The implement shall provide connections for extending the network to additional implements that would be connected in a serial method, as shown in Figure 2. Implements with several ECUs can use a network interconnection ECU that would isolate the additional ECU from the implement network.

6.7 Virtual terminal

The virtual terminal is an ECU that provides an operator interface for an implement or tractor using the specified standardized messages of an ISO 11783 network. ISO 11783-6 specifies the requirements of a virtual terminal (VT). The VT shown in Figure 2 is attached to the implement network. The tractor ECU or other ECUs within the tractor that are connected to the implement network can utilize the VT using the same method as for the implement ECU.

6.8 Tractor ECU

A network interconnect unit shall be provided between the tractor and the implement networks to assure both electrical and message isolation. If both networks are included in a system, manufacturers of the tractor or main power unit may use the tractor ECU or a similar unit to receive requests for messages listed in ISO 11783-7 from implement control functions. This ECU interprets the requests from the implement network and, in turn, communicates with the ECUs on the tractor network. The tractor ECU shall provide appropriate acknowledgments or responses to the requesting or commanding ECU, and shall provide the basic information and act on command messages in accordance with ISO 11783-9.

6.9 Task controllers

Task controllers provide scheduled control of implement functions via the ISO 11783 network. Task data received by the farm management computer interface is stored in the task controller. These tasks are scheduled by the task controller, which sends control messages to the appropriate control function for execution on the implement network. The task controller also records data received from control functions as tasks are being completed. This data is transferred to the farm management computer through the farm management computer interface on the implement network. The operation of the task controller and the format of messages sent to, and received from, control functions are defined in ISO 11783-10. The definition of the data elements used in the task controller messages is specified in a data dictionary given in ISO 11783-11.

6.10 Farm management computer interface

A farm management computer interface may be provided on the implement network. The physical interface of the gateway for the management computer is not specified in ISO 11783. Messages defined in ISO 11783-10 shall be used to provide data derived from files on a management computer to the management computer interface. See Figures 2 and 3.

6.11 Diagnostics

ISO 11783-12²⁾ specifies the messages to be used to determine the source of any faults that are the cause of malfunctioning of the ISO 11783 serial control and data communications network. The messages are also specified in other referenced diagnostics standards.

6.12 File server

ISO 11783-13³⁾ specifies an ECU that provides storage for data files and a set of commands that a control function on the ISO 11783 serial control and data communications network will use to access or write data from/to these files.

6.13 Process data

The process data message is used for the transmission of data to one or more control functions from the task controller. The message can also be used for transmitting data to another control function connected to the implement network. Process data message structure is defined in ISO 11783-7. The data definitions are in the data dictionary given in ISO 11783-11.

6.14 Working sets

6.14.1 General

A working set allows communications among units on a network where several control functions are acting as distributed processes providing a single application. These several control functions, each with a distinct NAME, can be in different ECUs connected by different nodes. Working sets are used in ISO 11783 where several dissimilar NAMES, possibly within different ECUs, are intended to co-operate as a single implement. The working set allows the use of a single address as a subset of the "global" destination for one-to-many communications, and to permit the receiver of many-to-one communications to associate each of the many control functions with all the others that form the particular working set. The format for the communications becomes one-to-one in each case, with all data for the working set sent to the address of the network NAME that has identified itself as the working-set master. All members of the working set listen to messages addressed to the master as though those messages were individually sent to each member. Messages, such as displayed data, sent by members of the working set are associated with the whole working set. The response to a request by a member of a working set shall be sent to the working-set master and is thereby heard by all of the members of the working set. This relieves the message loading where there is a distribution of functionality and reduces the work required of a control function that needs to send commands or other *destination-specific* messages to all of the members of the working-set. Working-set masters and members require the capability to identify when non-working-set messages, such as programming operations or fault table erasure commands that are specific to the master, are not applied to the entire working set.

EXAMPLE 1 Working sets are used in ISO 11783 when several NAMES (not necessarily within different ECUs) on an implement such as a planter communicate with the virtual terminal so that the VT interprets that all of the working-set NAMES are providing data as a single VT entity.

EXAMPLE 2 A task controller has to command several NAMES to control to a single new set point value. When these NAMES are all members of a working set, sending this command to the working-set master accomplishes the same action as a series of commands sent to each of the individual NAMES in the set.

Two message types are required to define the working set. The first message defines the working set's size, the second identifies the members of the set. The master transmits both of these messages. The two messages are defined in ISO 11783-7.

The term "collaborator" is a network control function — whether in a single ECU or one control function of many within an ECU — that works with working sets and communicates with the set as a separate entity. It is not a member of the working set being described, but can be a member or master of another working set.

2) To be published.

6.14.2 Working-set application rules

The working-set application rules are the following.

- a) A working-set-master message shall always be followed by the appropriate number of working-set-member messages. The number of working-set-member messages is one less than working-set size. A collaborator of the working set that does not receive the correct number of member definitions shall request the working-set-master PGN from the master of the set. This means that the master shall completely define the set on receipt of this request. Applications that do not work with working sets may ignore the working-set messages and communicate directly with all other network devices.
- b) Working sets shall be defined by the NAMES of the working-set members. Working-set-member messages are sent at an interval of about 100 ms. If more than 350 ms has elapsed after a working-set-member message, the receiver shall assume that the working-set master has completed sending all the NAMES of the working-set members.
- c) Working-set members are also individual control functions on the network, and therefore communicate as individual control functions. Fault messages will be sent from the control function's SA, and any commands to clear fault tables, program parameters, and others shall be addressed to the individual SA of the intended control function. Working-set members shall be programmed to allow for such individual communications to the working-set master without having all the working-set members accepting programming not intended for them. While it is possible that programming of common data into all members of the working set is intended, this is not the most likely occurrence and requires that the member NAMES have application software to allow this to happen. Control functions that do not work with working sets may ignore working-set messages and communicate directly with all other network NAMES.
- d) Each NAME on the network shall not be a member of more than one working set. If an existing working-set master issues a new working-set-master message, collaborators of working sets on the network shall replace the old working-set definition with the new definition. A working-set master shall be responsible for re-defining their working set if changes are needed, and it shall send a working-set-master message with data of zero if the working set's purpose is no longer required.
- e) The working-set master shall create a new working set when it changes its NAME. The old working set will no longer exist, but its definition can remain in the memory of the collaborator unit until a clean-up is performed using the method specified in d) by sending a working-set-master message with data of zero. The collaborator of the working set has the responsibility for detecting and correcting duplication of members of a set. Collaborators of working sets shall periodically check for duplications and for unused working sets in order to recover the internal memory used for those sets that are no longer active.
- f) A change in the SA of the working-set master does *not* change the definition of the set. The collaborators shall update the association of SA to NAME when the new address claim is received, and the working-set members shall change the address that they will use to receive working-set communications.
- g) The collaborators of working sets shall associate a new SA with the appropriate working set when a working-set member changes its SA. Since the working-set members are defined by NAME, the SA change, assuming that the NAME is unchanged, can be handled by the working-set collaborators as they receive new address claim messages.
- h) It is the responsibility of the working-set master to account for all of the NAMES of members of the working set. The master shall revise the working-set definition when new members join the network. Collaborators shall create the working set with the total number of members as specified in the working-set-member messages, and then add the SA of members as they claim addresses. This process is similar to the above process of changing the SA of a member that is active but which has changed its SA because of a later address claim by another function.

6.15 Safe mode operation

Control functions, designed according to the requirements of this standard, provide information and controls in messages sent to a virtual terminal, an auxiliary controller or a task controller as specified in this standard. Manufacturers (see Annex G for codes) shall ensure that the controls requested of a virtual terminal, an auxiliary controller or a task controller are designed and constructed according to applicable safety standards. The functions provided by the controller(s) shall be designed such that the desired effect(s) shall occur and not result with a risk of injury.

ISO 11783-9 specifies additional safe mode operations requirements.

6.16 Addition of parameters and messages

Implement messages for communications between implements and a tractor are specified in ISO 11783-7. ISO 11783-8 specifies the messages for the tractor power train.

Message sets developed for specific applications can be added to ISO 11783. Proposed message sets shall be submitted to ISO TC 23/SC 19's Working Group WG 1 using the forms provided in Annex H. The Working Group, after review and any necessary revision, forwards the recommended message set to the Subcommittee as a proposed addition to either ISO 11783-7, ISO 11783-8, ISO 11783-9 or ISO 11783-10³⁾. All ISO 11783 parameters and messages are registered in the SAE J 1939 database at the request of WG 1.

3) To be published.

Annex A (normative)

Parameter group assignments

For the purposes of this annex, the following abbreviations are used:

DP	data page (1 bit)	GE	group extension (8 bits)
PF	PDU format (8 bits)	DA	destination address (8 bits)
PS	PDU specific (8 bits) (either DA or GE)	MP	multi-packet allowed (Yes or No)
PGN	parameter group number (3 bytes) (see ISO 11783-3 for a description)	1939-71	number of applicable SAE J 1939 standard

NOTE The DA cannot be defined before a receiver of the message is determined by the real-time operating software that is sending the message. So this 8-bit frame is simply designated as a DA. GE is the extension added to the PF and the DP to identify the PGN which in turn identifies the message contents. For PFs greater than 139, the GE is used to make up the PGN. PF of 139 and lower use 0 for the GE, as this field is being used for the DA. See ISO 11783-3 for a detailed explanation of the relationship between those elements.

DP	PF	PS	PGN	Parameter Group Label	Acronym	MP	PGN Doc	Description
0	0	DA	0	Torque/Speed Control 1	TSC1	No	1939-71	
0	1	DA	256	Transmission Control 1	TC1	No	1939-71	
0	2	DA	512	Reserved for ISO 11992	EBS11	No	ISO 11992	
0	3	DA	768	Reserved for ISO 11992	EBS21	No	ISO 11992	
0	4	DA	1024	External Brake Request	XBR	No	1939-71	Used for brake control by an external device
0	5	DA	1280	Reserved for CANopen	CAM11	No	ISO 11992	CAN open Application Message #1/1
0	6	DA	1536	Reserved for CANopen	CAM21	No	ISO 11992	CAN open Application Message #2/1
0	7	DA	1792	General Purpose Valve Load Sense Pressure	GPV4	No	ISO 11783-7	Measurement of load sense and pilot pressure of a general-purpose valve

0 170	DA	43520	Client to File Server message	No	ISO 11783-7	File server message from a client on the network
0 171	DA	43776	File Server to client message	No	ISO 11783-7	File server message to a client on the network
0 172	DA	44032	Guidance System Machine Information	No	ISO 11783-7	Machine system feedback detailing status of machine relative to guidance operation
0 173	DA	44288	Guidance System Command	No	ISO 11783-7	Steering command expressed as desired curvature
0 174	DA	44544	Tyre Pressure Reference Setting	No	1939-71	Message used for setting the tyre pressure reference values
0 175	DA	44800	Parameter Locate Message	No	1939-74	Message that causes other control functions to respond with the identity of any message that they send in which the particular parameter (identified by specific SPN) is contained
0 176	DA	45056	Configuration Identification Message	No	1939-74	Message used to identify the data content (by SPN) of one of the configurable messages (identified by PGN)
0 177	DA	45312	Proprietarily Configurable Message #1	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 178	DA	45568	Proprietarily Configurable Message #2	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 179	DA	45824	Proprietarily Configurable Message #3	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 180	DA	46080	Proprietarily Configurable Message #4	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 181	DA	46336	Proprietarily Configurable Message #5	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 182	DA	46592	Proprietarily Configurable Message #6	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 183	DA	46848	Proprietarily Configurable Message #7	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 184	DA	47104	Proprietarily Configurable Message #8	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 185	DA	47360	Proprietarily Configurable Message #9	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 186	DA	47616	Proprietarily Configurable Message #10	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 187	DA	47872	Proprietarily Configurable Message #11	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 188	DA	48128	Proprietarily Configurable Message #12	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 189	DA	48384	Proprietarily Configurable Message #13	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74
0 190	DA	48640	Proprietarily Configurable Message #14	Yes	1939-74	Proprietarily configuration message for use in SAE J 1939-74

0 191 DA 48896	Proprietary Configurable Message #15	PCM15	Yes	1939-74	Proprietary configuration message for use in SAE J 1939-74
0 192 DA 49152	Proprietary Configurable Message #16	PCM16	Yes	1939-74	Proprietary configuration message for use in SAE J 1939-74
0 193 DA 49408	Diagnostic Readiness 2	DR2	No	1939-73	Message to convey information relevant to the readiness of the OBD system
0 194 DA 49664	Reserved for DM20	DM20	Yes	1939-73	Reserved for DM20
0 195 DA 49920	Clear/Reset Active and Previously Active DTC	DM21	No	1939-73	Individual clear/reset of active and previously active DTC
0 196 DA 50176	General Purpose Valve Command	GPV3	No	ISO 11783-7	Controls the flow through a general purpose valve
0 197 DA 50432	General Purpose Valve Measured Flow	GPV2	No	ISO 11783-7	Measurement of the flow through a general purpose valve
0 198 DA 50688	General Purpose Valve Estimated Flow	GPV1	No	ISO 11783-7	Estimated flow through of a general purpose valve
0 199 DA 50944	Extended Transport Protocol – Data Transfer	ETP-DT	Yes	ISO 11783-6	Defined in ISO 11783-6
0 200 DA 51200	Extended Transport Protocol – Connection Mgt	ETP-CM	No	ISO 11783-6	Defined in ISO 11783-6
0 201 DA 51456	Request 2	RQST2	No	ISO 11783-3	Requests a PGN from network control function or functions and to specify whether the response can or cannot use the Transfer PGN and data set for all control functions it is tasked with reporting.
0 202 DA 51712	Transfer	XFER	No	ISO 11783-3	PGN that provides a mechanism for reporting multiple data sets for a given PGN
0 203 DA 51968	Process Data Message	PD	No	ISO 11783-7	Message defined as destination specific and the sender shall determine which implement receives the message
0 204 DA 52224	Request for Repetition Rate	REQRR	No	ISO 11783-7	Message allowing the system to adapt the network bandwidth to the needs of the user of messages
0 205 DA 52480	Reserved for ISO 15765 KWP2000	KWP4	No	ISO 15765	Mixed functional addressing
0 206 DA 52736	Reserved for ISO 15765 KWP2000	KWP3	No	ISO 15765	Mixed physical addressing
0 207 DA 52992	Continuous Torque & Speed Limit Request	CTL	No	1939-71	
0 208 DA 53248	Cab Illumination Message	CL	No	1939-71	Message contains information that controls illumination sources inside the vehicle's cab
0 209 DA 53504	Air Suspension Control 6	ASC6	No	1939-71	Used for suspension control
0 210 DA 53760	Air Suspension Control 2	ASC2	No	1939-71	Used for suspension control
0 211 DA 54016	Calibration Information	DM19	Yes	1939-73	Information about the calibration to scan tool

0 212	DA	54272	Data Security	DM18	Yes	1939-73	
0 213	DA	54528	Time/Date Adjust	TDA	No	1939-71	
0 214	DA	54784	Boot Load Data	DM17	Yes	1939-73	
0 215	DA	55040	Binary Data Transfer	DM16	Yes	1939-73	
0 216	DA	55296	Memory Access Response	DM15	No	1939-73	
0 217	DA	55552	Memory Access Request	DM14	Yes	1939-73	
0 218	DA	55808	Reserved for ISO 15765	KWP2	No	ISO 15765	
0 219	DA	56064	Reserved for ISO 15765	KWP1	No	ISO 15765	
0 220	DA	56320	Anti-theft Status	ATS	No	1939-71	
0 221	DA	56576	Anti-theft Request	ATR	Yes	1939-71	
0 222	DA	56832	Reset	RESET	No	1939-71	
0 223	DA	57088	Diagnostic Message #13	DM13	No	1939-73	Message that stop or start broadcast messages — can be on networks other than ISO 11783 network
0 224	DA	57344	Cab Message 1	CM1	No	1939-71	Message containing parameters originating from a vehicle cab
0 225	DA	57600	Reserved for ISO 11992	GFM21	No	ISO 11992	
0 226	DA	57856	Reserved for ISO 11992	GFM11	No	ISO 11992	
0 227	DA	58112	Diagnostic Message #7	DM7	No	1939-73	
0 228	DA	58368	Reserved for ISO 11992	RGE11	No	ISO 11992	
0 229	DA	58624	Reserved for ISO 11992	RGE21	No	ISO 11992	
0 230	DA	58880	Virtual Terminal-to-Working Set	VT12	Yes	ISO 11783-6	
0 231	DA	59136	Working Set-to-Virtual Terminal	VT21	Yes	ISO 11783-6	
0 232	DA	59392	Acknowledgment Message	ACKM	No	ISO 11783-3	Acknowledgment PG that provides a handshake mechanism between transmitting and receiving control functions
0 234	DA	59904	Request	RQST	No	ISO 11783-3	Provides the capability to request information globally or from a specific destination as identified by the PGN
0 235	DA	60160	Transport Protocol – Data Transfer	TP.DT	No	ISO 11783-3	Used for the transfer of data associated with parameter groups with more than 8 bytes of data

0 236	DA	60416	Transport Protocol — Connection Mgmt	TP.CM.xx	No	ISO 11783-3	Used for the transfer of parameter groups with 9 or more bytes of data
0 237	DA	60672	Network Layer	N.xx	Yes	ISO 11783-4	
0 238	DA	60928	Address Claimed Message	AC	No	ISO 11783-5	Used to claim an address for a control function
0 239	DA	61184	Proprietary A	PropA	Yes	ISO 11783-3	Proprietary PG using the destination specific PDU format to allow manufacturers to direct their proprietary communications to a specific destination node
0 240	0	61440	Electronic Retarder Controller 1	ERC1	No	1939-71	Message transmitted by several types of retarding controllers
0 240	1	61441	Electronic Brake Controller 1	EBC1	No	1939-71	Used for brake control information
0 240	2	61442	Electronic Transmission Controller 1	ETC1	No	1939-71	
0 240	3	61443	Electronic Engine Controller 2	EEC2	No	1939-71	
0 240	4	61444	Electronic Engine Controller 1	EEC1	No	1939-71	Engine related parameters
0 240	5	61445	Electronic Transmission Controller 2	ETC2	No	1939-71	
0 240	6	61446	Electronic Axle Controller 1	EAC1	No	1939-71	
0 240	7	61447	Forward Lane Image urgent message	FLI1	No	1939-71	
0 240	8	61448	Hydraulic Pressure Governor Info	HPG	No	1939-71	Information used for a hydraulic pressure governing control system
0 240	9	61449	Vehicle Dynamic Stability Control 2	VDC2	No	1939-71	Contains information which relates to the vehicle's movement
0 240	10	61450	Engine Gas Flow Rate	EGF1	No	1939-71	Low rates of air and mixed gasses into the engine cylinders
0 240	11	61451	Electronic Steering Control	ESC1	No	1939-71	PGN that indicates the actual angle and the status of a steerable axle
0 240	12	61452	Electronic Transmission Controller #8	ETC8	No	1939-71	Electronic transmission controller #8
0 240	13	61453	Land Levelling System Operational Information	LOI	No	1939-71	Group of operational parameters associated with the land levelling system, such as switch states
0 240	14	61454	After Treatment Intake Gas 1		No	1939-71	

0 240 15	61455	After Treatment Outlet Gas 1	No	1939-71	
0 240 16	61456	After Treatment Intake Gas 1-b	No	1939-71	
0 240 17	61457	After Treatment Outlet Gas 1-b	No	1939-71	
0 240 18	61458	Fifth Wheel Smart Systems 1	FWSS1	No	1939-71
					Message for determining the status of the tractor to trailer coupling system integrity
0 240 19	61459	Slope Sensor Information	SSI	No	1939-71
					Slope sensor information
0 253 171	64939	Complete Configurable Message Set Request	RCMS	No	1939-71
					Request for all ECUs to send the complete sequence of configuration identification messages for a particular one or all of the configurable messages that they send
0 253 172	64940	Rotational Sensor Angle	RSA	No	1939-71
					Message of the measurement of a rotation angle around a single axis
0 253 173	64941	Reserved			1939-71
					Reserved for future assignment
0 253 174	64942	Fifth Wheel Smart Systems 2	FWSS2	No	1939-71
					Message used to convey operator parameters associated with the tractor to trailer coupling control and error state
0 253 175	64943	After Treatment Intermediate Gas 1-b	No	1939-71	
0 253 176	64944	After Treatment Outlet Gas 2-b	No	1939-71	
0 253 177	64945	After Treatment Intake Gas 2-b	No	1939-71	
0 253 178	64946	After Treatment Intermediate Gas 1	No	1939-71	
0 253 179	64947	After Treatment Outlet Gas 2	No	1939-71	
0 253 180	64948	After Treatment Intake Gas 2	No	1939-71	
0 253 181	64949	Previous Active Emission Related Faults	No	1939-71	
0 253 182	64950	SPN Support	No	1939-71	
0 253 183	64951	Expanded Freeze Frame	No	1939-71	
0 253 184	64952	Diagnostic Readiness 3	No	1939-71	
0 253 185	64953	Tyre Pressure Reference Information	TPRI	No	1939-71
					Information on actual tyre pressure reference value for monitoring
0 253 186	64954	Farebox Status	TR6	No	1939-71
					Used to report alarms of the fare collection unit
0 253 187	64955	Farebox Point of Sale	TR5	No	1939-71
					Used to report stop-level point of sale detail

0 253 188	64956	Farebox Service Detail	TR4	Yes	1939-71	Used to identify service, assignments and fare preset detail of the fare collection unit
0 253 189	64957	Signal Pre-emption	TR3	No	1939-71	Status and configuration of the controller used for intersection pre-emption
0 253 190	64958	Transit Route	TR1	Yes	1939-71	Current route assigned to this transit vehicle
0 253 191	64959	Transit Milepost	TR2	Yes	1939-71	Identification of a transit route milepost
0 253 192	64960	Passenger Counter	TR7	No	1939-71	Used to notify the transit link controllers of the passenger count
0 253 193	64961	Engine Fluid Level/Pressure 3	EFL/P3	No	1939-71	Message containing information on brake control
0 253 196	64964	Electronic Brake Controller 5	EBC5	No	1939-71	Message for reporting identification and information about the physical ECU and its hardware
0 253 197	64965	ECU Identification Information	ECUID	Yes	1939-71	Cold start aid information and settings
0 253 198	64966	Cold Start Aids		No	1939-71	Reports the states of off-highway engine control modes, as they apply to different modes of engine operation which can be used to aid particular working environments
0 253 199	64967	Off-Highway Engine Control Selection States	OHCSS	No	1939-71	Used to provide the controller feedback to indicate the controls state achieved
0 253 200	64968	Operator Primary Intermediate Speed Control	ISCS	No	1939-71	Information relating to electronic control modules
0 253 201	64969	Electronic Control Module Information	CMI	Yes	1939-71	Message that addresses the particular needs of the industrial engine operational functionality concerning the intermediate speed control operation
0 253 202	64970	Intermediate Speed Control	ISC	No	1939-71	Allows for the selection of off-highway engine control modes, as they apply to different modes of engine operation which can be used to aid particular working environments
0 253 203	64971	Off-Highway Engine Control Selection	OHECS	No	1939-71	Message containing the information about the position of the operator's external light control switch(s)
0 253 204	64972	Operators External Light Controls Message	OEL	No	1939-71	Message for items related to the operators controls for the window wipers and washers on the front and rear cab windows
0 253 205	64973	Operator Wiper and Washer Controls Message	OWW	No	1939-71	Message sent by the master of a working set to identify an individual member of a specific working set
0 253 206	64974	Working Set Member Message	WSMM	No	1939-81	

0 253 207	64975	Working Set Master Message	WSM	No	1939-81	Message sent by the master of a working set that identifies the number of individual members of the working set
0 253 208	64976	Inlet/Exhaust Conditions 2	IC2	No	1939-71	Second PGN conveying this type of engine information (see also PGN 65270)
0 253 209	64977	FMS-standard Interface Identity/Capabilities	FMS	No	1939-71	Information that specifies the capabilities of the fleet management system (FMS) — standard interface unit
0 253 210	64978	ECU Performance	EP	No	1939-71	Message used to transfer ECU performance parameters
0 253 211	64979	Turbocharger Information 6	TCI6	No	1939-71	Turbocharger compressor outlet discharge temperature
0 253 212	64980	Cab Message 3	CM3	No	1939-71	Provides information from cab-mounted operator inputs
0 253 213	64981	Electronic Engine Controller 5	EEC5	No	1939-71	Engine-related parameters
0 253 214	64982	Basic Joystick Message 1	BJM1	No	1939-71	Used to transfer information about the measured status of the first two axes and up to 12 buttons of a joystick
0 253 215	64983	Extended Joystick Message 1	EJM1	No	1939-71	Used to transfer information about the measured status of three additional axes of a joystick and switches of the joystick grip or handle
0 253 216	64984	Basic Joystick Message 2	BJM2	No	1939-71	Used to transfer information about the measured status of the first two axes and up to 12 buttons of a joystick
0 253 217	64985	Extended Joystick Message 2	EJM2	No	1939-71	Used to transfer information about the measured status of three additional axes of a joystick and switches of the joystick grip or handle
0 253 218	64986	Basic Joystick Message 3	BJM3	No	1939-71	Used to transfer information about the measured status of the first two axes and up to 12 buttons of a joystick
0 253 219	64987	Extended Joystick Message 3	EJM3	No	1939-71	Used to transfer information about the measured status of three additional axes of a joystick and switches of the joystick grip or handle
0 253 220	64988	Marine Control Information	MCI	No	1939-71	Message that contains marine vessel control information for the engine
0 253 221	64989	Military Application Tractor — Trailer	MAM11	No	ISO 11992	Tractor-to-trailer message for military applications using ISO 11992
0 253 222	64990	Military Application Trailer — Tractor Feedback	MAM21	No	ISO 11992	Feedback message from trailer to tractor for military applications using ISO 11992

0 253 223	64991	Front Wheel Drive Status	FWD	No	1939-71	Front wheel drive ECU information
0 253 224	64992	Ambient Conditions 2	AMB2	No	1939-71	Message containing measurement and configuration information about the vehicle ambient conditions
0 253 225	64993	Cab A/C Climate System Information	CACI	No	1939-71	Message containing measurement and condition information from cab air conditioning components
0 253 226	64994	Supply Pressure Demand	SPR	No	1939-71	Used for controlling the supply pressure and often used to raise the pressure of a supply pressure circuit in situations where more pneumatic energy is needed
0 253 227	64995	Equipment Operation and Control	EOAC	No	1939-71	Parameters related to the operation and controls for equipment
0 253 228	64996	Equipment Performance Data	EPD	No	1939-71	Parameters related to the performance characteristics of equipment
0 253 229	64997	Maximum Vehicle Speed Limit	MVS	No	1939-71	Status reports the possible maximum vehicle speed limits, one through seven, and the applied maximum vehicle speed limit
0 253 230	64998	Hydraulic Braking System	HBS	No	1939-71	Used for information on a hydraulic brake system
0 253 231	64999	Bus #1 Utility Sync Check Status	BUSC	No	1939-75	
0 253 232	65000	Bus #1 Generator Sync Check Status	BGSC	No	1939-75	
0 253 233	65001	Bus #1 Phase C Basic AC Quantities	BPCAC	No	1939-75	
0 253 234	65002	Bus #1 Phase B Basic AC Quantities	BPBAC	No	1939-75	
0 253 235	65003	Bus #1 Phase A Basic AC Quantities	BPAAC	No	1939-75	
0 253 236	65004	Bus #1 Average Basic AC Quantities	BAAC	No	1939-75	
0 253 237	65005	Utility Total AC Energy	UTACE	No	1939-75	
0 253 238	65006	Utility Phase C AC Reactive Power	UPCACR	No	1939-75	
0 253 239	65007	Utility Phase C AC Power	UPCACP	No	1939-75	
0 253 240	65008	Utility Phase C AC Basic Quantities	UPCAC	No	1939-75	
0 253 241	65009	Utility Phase B AC Reactive Power	UPBACR	No	1939-75	
0 253 242	65010	Utility Phase B AC Power	UPBACP	No	1939-75	
0 253 243	65011	Utility Phase B AC Basic Quantities	UPBAC	No	1939-75	
0 253 244	65012	Utility Phase A AC Reactive Power	UPACCR	No	1939-75	

0	253 245	65013	Utility Phase A AC Power	UPAACP	No	1939-75	
0	253 246	65014	Utility Phase A Basic AC Quantities	UPAAC	No	1939-75	
0	253 247	65015	Utility Total AC Reactive Power	UTACR	No	1939-75	
0	253 248	65016	Utility Total AC Power	UTACP	No	1939-75	
0	253 249	65017	Utility Average Basic AC Quantities	UAAC	No	1939-75	
0	253 250	65018	Generator Total AC Energy	GTACE	No	1939-75	
0	253 251	65019	Generator Phase C AC Reactive Power	GPCACR	No	1939-75	
0	253 252	65020	Generator Phase C AC Power	GPCACP	No	1939-75	
0	253 253	65021	Generator Phase C Basic AC Quantities	GPCAC	No	1939-75	
0	253 254	65022	Generator Phase B AC Reactive Power	GPBACRP	No	1939-75	
0	253 255	65023	Generator Phase B AC Power	GPBACP	No	1939-75	
0	254 0	65024	Generator Phase B Basic AC Quantities	GPBAC	No	1939-75	
0	254 1	65025	Generator Phase A AC Reactive Power	GPAACR	No	1939-75	
0	254 2	65026	Generator Phase A AC Power	GPAACP	No	1939-75	
0	254 3	65027	Generator Phase A Basic AC Quantities	GPAAC	No	1939-75	
0	254 4	65028	Generator Total AC Reactive Power	GTACR	No	1939-75	
0	254 5	65029	Generator Total AC Power	GTACP	No	1939-75	
0	254 6	65030	Generator Average Basic AC Quantities	GAAC	No	1939-75	
0	254 7	65031	Exhaust Temperature	ET	No	1939-71	
0	254 8	65032	Required Tractor Facilities message	RTF	No	ISO 11783-7	Implements response to task controller or tractor ECU desired tractor classification and facilities
0	254 9	65033	Tractor Facilities response message	TFR	No	ISO 11783-7	Tractor response to an implement ECU or task controller tractor classification and facilities request
0	254 10	65034	Implement Remote Control Tractor Response	IRCR	No	ISO 11783-7	Command that is a task controller or an implement ECU-to-tractor ECU message
0	254 11	65035	Implement Remote Control Command	IRC	No	ISO 11783-7	Commands from a task controller or an implement ECU-to-tractor ECU

0 254 12	65036	Working Set Member	WSMEM	No	ISO 11783-7	Message sent by the master of a working set to identify an individual member of a specific working set
0 254 13	65037	Working Set Master	WSMSTR	No	ISO 11783-7	Message sent by the master of a working set that identifies the number of individual members of the working set
0 254 14	65038	Response for Repetition Rate	RESRR	No	ISO 11783-7	Global message that is the response of the request of a specific user to change the repetition rate
0 254 15	65039	Language Command	LC	No	ISO 11783-7	Global message informing all ECUs on the ISO 11783 network of the language the operator wants to use, the date and time format and the units of measure to be displayed by the connected system
0 254 16	65040	Auxiliary Valve Number 0 Estimated Flow	AV00EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 17	65041	Auxiliary Valve Number 1 Estimated Flow	AV01EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 18	65042	Auxiliary Valve Number 2 Estimated Flow	AV02EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 19	65043	Auxiliary Valve Number 3 Estimated Flow	AV03EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 20	65044	Auxiliary Valve Number 4 Estimated Flow	AV04EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 21	65045	Auxiliary Valve Number 5 Estimated Flow	AV05EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 22	65046	Auxiliary Valve Number 6 Estimated Flow	AV06EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 23	65047	Auxiliary Valve Number 7 Estimated Flow	AV07EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 24	65048	Auxiliary Valve Number 8 Estimated Flow	AV08EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 25	5049	Auxiliary Valve Number 9 Estimated Flow	AV09EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 26	65050	Auxiliary Valve Number 10 Estimated Flow	AV10EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 27	65051	Auxiliary Valve Number 11 Estimated Flow	AV11EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 28	65052	Auxiliary Valve Number 12 Estimated Flow	AV12EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 29	65053	Auxiliary Valve Number 13 Estimated Flow	AV13EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 30	65054	Auxiliary Valve Number 14 Estimated Flow	AV14EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 31	65055	Auxiliary Valve Number 15 Estimated Flow	AV15EF	No	ISO 11783-7	Message providing the estimated flow of specified auxiliary valve
0 254 32	65056	Auxiliary Valve Number 0 Measured Flow	AV00MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0 254 33	65057	Auxiliary Valve Number 1 Measured Flow	AV01MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0 254 34	65058	Auxiliary Valve Number 2 Measured Flow	AV02MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve

0	254	35	65059	Auxiliary Valve Number 3 Measured Flow	AV03MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	36	65060	Auxiliary Valve Number 4 Measured Flow	AV04MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	37	65061	Auxiliary Valve Number 5 Measured Flow	AV05MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	38	65062	Auxiliary Valve Number 6 Measured Flow	AV06MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	39	65063	Auxiliary Valve Number 7 Measured Flow	AV07MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	40	65064	Auxiliary Valve Number 8 Measured Flow	AV08MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	41	65065	Auxiliary Valve Number 9 Measured Flow	AV09MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	42	65066	Auxiliary Valve Number 10 Measured Flow	AV10MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	43	65067	Auxiliary Valve Number 11 Measured Flow	AV11MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	44	65068	Auxiliary Valve Number 12 Measured Flow	AV12MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	45	65069	Auxiliary Valve Number 13 Measured Flow	AV13MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	46	65070	Auxiliary Valve Number 14 Measured Flow	AV14MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	47	65071	Auxiliary Valve Number 15 Measured Flow	AV15MF	No	ISO 11783-7	Message providing the measurement of specified auxiliary valve
0	254	48	65072	Auxiliary Valve Number 0 Command	AV00C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	49	65073	Auxiliary Valve Number 1 Command	AV01C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	50	65074	Auxiliary Valve Number 2 Command	AV02C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	51	65075	Auxiliary Valve Number 3 Command	AV03C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	52	65076	Auxiliary Valve Number 4 Command	AV04C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	53	65077	Auxiliary Valve Number 5 Command	AV05C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	54	65078	Auxiliary Valve Number 6 Command	AV06C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	55	65079	Auxiliary Valve Number 7 Command	AV07C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	56	65080	Auxiliary Valve Number 8 Command	AV08C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	57	65081	Auxiliary Valve Number 9 Command	AV09C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	58	65082	Auxiliary Valve Number 10 Command	AV10C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	59	65083	Auxiliary Valve Number 11 Command	AV11C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0	254	60	65084	Auxiliary Valve Number 12 Command	AV12C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve

0 254 61	65085	Auxiliary Valve Number 13 Command	AV13C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0 254 62	65086	Auxiliary Valve Number 14 Command	AV14C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0 254 63	65087	Auxiliary Valve Number 15 Command	AV15C	No	ISO 11783-7	Message providing control of the flow through the auxiliary valve
0 254 64	65088	Lighting Data	LD	No	ISO 11783-7	Response to the request for lighting data in the lighting command message provided by lighting function controllers on the tractor and attached implements
0 254 65	65089	Lighting Command	LC	No	ISO 11783-7	Global command message from the tractor to all lighting function controllers on the tractor and attached implements
0 254 66	65090	Hitch and PTO Commands	HPTOC	No	ISO 11783-7	Message providing control of the hitch position, PTO shaft set point speed and PTO engagement
0 254 67	65091	Primary or Rear Power Take-off Output Shaft	RPTO	No	ISO 11783-7	Message providing the measurement of the current primary or rear PTO output shaft parameters
0 254 68	65092	Secondary or Front Power Take-off Output Shaft	FPTO	No	ISO 11783-7	Message providing the measurement of the current secondary or front PTO output shaft parameters
0 254 69	65093	Primary or Rear Hitch Status	RHS	No	ISO 11783-7	Message providing the measurement of the current rear hitch parameters
0 254 70	65094	Secondary or Front Hitch Status	FHS	No	ISO 11783-7	Message providing the measurement of the current front hitch parameters
0 254 71	65095	Maintain Power	MP	No	ISO 11783-7	Message requesting the tractor ECU not switch off the power for the next 2 s, sent by any ECU connected to the implement network
0 254 72	65096	Wheel-based Speed and Distance	WBSD	No	ISO 11783-7	Message providing the current measured wheel-based speed that is sent by the tractor ECU to connected systems on the implement network on construction and agricultural implements
0 254 73	65097	Ground-based Speed and Distance	GBSD	No	ISO 11783-7	Message providing the current measured ground speed that is normally sent by the tractor ECU to connected systems on the implement network on construction and agricultural implements
0 254 74	65098	Electronic Transmission Controller 7	ETC7	No	1939-71	Transmission state information
0 254 75	65099	Transmission Configuration 2	TCFG2	Yes	1939-71	Contains transmission configuration information
0 254 76	65100	Military Lighting Command	ML	No	1939-71	Message containing parameters that control military-specific lights
0 254 77	65101	Total Averaged Information	TAVG	No	1939-71	Averages of information accumulated over the life of the engine

0 254 78	65102	Door Control	DC	No	1939-71	Used for door information
0 254 79	65103	Vehicle Dynamic Stability Control 1	VDC1	No	1939-71	Contains information which relates to the VDC system status
0 254 80	65104	Battery Temperature	BT1	No	1939-71	Contains battery temperature information
0 254 81	65105	Adaptive Cruise Control, Operator Input	ACC2	No	1939-71	Operator requested characteristics for the ACC systems operation.
0 254 82	65106	Vehicle Electrical Power 3	VP3	No	1939-71	Vehicle Electrical Power 3
0 254 83	65107	Retarder Continuous Torque & Speed Limit	RTC1	No	1939-71	
0 254 84	65108	Engine Continuous Torque & Speed Limit	ECT1	No	1939-71	
0 254 85	65109	Gaseous Fuel Properties	GFD	No	1939-71	Properties of the gaseous fuel
0 254 86	65110	Tank Information 1	TI1	No	1939-71	Contains information on various tank levels
0 254 87	65111	Air Suspension Control 5	ASC5	No	1939-71	Used for damper stiffness information
0 254 88	65112	Air Suspension Control 4	ASC4	No	1939-71	Used for bellow pressure information
0 254 89	65113	Air Suspension Control 3	ASC3	No	1939-71	Used for height information
0 254 90	65114	Air Suspension Control 1	ASC1	No	1939-71	Used for suspension control information
0 254 91	65115	Forward Lane Image	FLI2	No	1939-71	
0 254 92	65116	ISO 11992 (even) – Running Gear Equipment #2/2 RGE22		No	ISO 11992	Used for suspension information, direction from towed vehicle to towing vehicle
0 254 93	65117	ISO 11992 (odd) – General Purpose Message #1/2 GPM12		No	ISO 11992	Used for power train information, direction from towing vehicle to towed vehicle
0 254 94	65118	ISO 11992 (even) – Running Gear Equipment #2/3 RGE23		No	ISO 11992	Used for tyre monitoring, direction from towed vehicle to towing vehicle
0 254 95	65119	ISO 11992 (odd) – General Purpose Message #1/3 GPM13		No	ISO 11992	Used for power train information, direction from towing vehicle to towed vehicle
0 254 96	65120	ISO 11992 (even) – General Purpose Message #2/3 GPM23		No	ISO 11992	Used for power train control, direction from towed vehicle to towing vehicle
0 254 97	65121	ISO 11992 (odd) – General Purpose Message #1/4 GPM14		No	ISO 11992	Used for power train information, direction from towing vehicle to towed vehicle
0 254 98	65122	ISO 11992 (even) – General Purpose Message #2/4 GPM24		No	ISO 11992	Used for power train control, direction from towed vehicle to towing vehicle

0 254 99	65123	ISO 11992 (odd) – General Purpose Message #1/5 GPM15	No	ISO 11992	Used for power train information, direction from towing vehicle to towed vehicle
0 254 100	65124	ISO 11992 (even) – General Purpose Message #2/5 GPM25	No	ISO 11992	Used for lights information, direction from towed vehicle to towing vehicle
0 254 101	65125	ISO 11992 (odd) – General Purpose Message #1/6 GPM16	No	ISO 11992	Used for general information, direction from towing vehicle to towed vehicle
0 254 102	65126	Battery Main Switch Information	BM	No	1939-71
0 254 103	65127	Climate Control Configuration	CCC	No	1939-71
0 254 104	65128	Vehicle Fluids	VF	No	1939-71
0 254 105	65129	Engine Temperature 3	ET3	No	1939-71
0 254 106	65130	Engine Fuel/lube systems	EFS	No	1939-71
0 254 107	65131	Driver's Identification	DI	Yes	1939-71
0 254 108	65132	Tachograph	TCO1	No	1939-71
0 254 109	65133	Heater Information	HTR	No	1939-71
0 254 110	65134	High-Resolution Wheel Speed	HRW	No	1939-71
0 254 111	65135	Adaptive Cruise Control	ACC1	No	1939-71
0 254 112	65136	Combination Vehicle Weight	CVW	Yes	1939-71
0 254 113	65137	Laser Tracer Position	LTP	No	1939-71
0 254 114	65138	Laser Levelling System Blade Control	LBC	No	1939-71
0 254 115	65139	Laser Receiver Mast Position	LMP	No	1939-71
0 254 116	65140	Modify Levelling System Control Set Point	LSP	No	1939-71
0 254 117	65141	Laser Levelling System Vertical Deviation	LVD	No	1939-71
0 254 118	65142	Laser Levelling System Vertical Position Display Data	LVDD	No	1939-71
0 254 119	65143	Auxiliary Pressures	AP	No	1939-71
0 254 120	65144	Tyre Pressure Control Unit Mode and Status	TP1	No	1939-71
0 254 121	65145	Tyre Pressure Control Unit Target Pressures	TP2	No	1939-71

0	254 122	65146	Tyre Pressure Control Unit Current Pressures	TP3	No	1939-71
0	254 123	65147	Combustion Time 1	CT1	No	1939-71
0	254 124	65148	Combustion Time 2	CT2	No	1939-71
0	254 125	65149	Combustion Time 3	CT3	No	1939-71
0	254 126	65150	Combustion Time 4	CT4	No	1939-71
0	254 127	65151	Combustion Time 5	CT5	No	1939-71
0	254 128	65152	Combustion Time 6	CT6	No	1939-71
0	254 129	65153	Fuel Information 2 (Gaseous)	GFI2	No	1939-71
0	254 130	65154	Ignition Timing 1	IT1	No	1939-71
0	254 131	65155	Ignition Timing 2	IT2	No	1939-71
0	254 132	65156	Ignition Timing 3	IT3	No	1939-71
0	254 133	65157	Ignition Timing 4	IT4	No	1939-71
0	254 134	65158	Ignition Timing 5	IT5	No	1939-71
0	254 135	65159	Ignition Timing 6	IT6	No	1939-71
0	254 136	65160	Ignition Transformer Secondary Output 1	ISO1	No	1939-71
0	254 137	65161	Ignition Transformer Secondary Output 2	ISO2	No	1939-71
0	254 138	65162	Ignition Transformer Secondary Output 3	ISO3	No	1939-71
0	254 139	65163	Gaseous Fuel Pressure	GFP	No	1939-71
0	254 140	65164	Auxiliary Analogue Information Auxiliary Analogue Information	AAI	No	1939-71
0	254 141	65165	Vehicle Electrical Power 2	VP2	No	1939-71
0	254 142	65166	Service 2	S2	Yes	1939-71
0	254 143	65167	Supply Pressure 2	SP2	No	1939-71
0	254 144	65168	Engine Torque History	ETH	Yes	1939-71
0	254 145	65169	Fuel Leakage	FL	No	1939-71
0	254 146	65170	Engine Information	EI	No	1939-71
0	254 147	65171	Engine Electrical System/Module Information	EES	No	1939-71

0 254 148	65172	Engine Auxiliary Coolant	EAC	No	1939-71
0 254 149	65173	Rebuild Information	RBI	No	1939-71
0 254 150	65174	Turbocharger Wastegate	TCW	No	1939-71
0 254 151	65175	Turbocharger Information 5	TCI5	No	1939-71
0 254 152	65176	Turbocharger Information 4	TCI4	No	1939-71
0 254 153	65177	Turbocharger Information 3	TCI3	No	1939-71
0 254 154	65178	Turbocharger Information 2	TCI2	No	1939-71
0 254 155	65179	Turbocharger Information 1	TCI1	No	1939-71
0 254 156	65180	Main Bearing Temperature 3	MBT3	No	1939-71
0 254 157	65181	Main Bearing Temperature 2	MBT2	No	1939-71
0 254 158	65182	Main Bearing Temperature 1	MBT1	No	1939-71
0 254 159	65183	Exhaust Port Temperature 5	EPT5	No	1939-71
0 254 160	65184	Exhaust Port Temperature 4	EPT4	No	1939-71
0 254 161	65185	Exhaust Port Temperature 3	EPT3	No	1939-71
0 254 162	65186	Exhaust Port Temperature 2	EPT2	No	1939-71
0 254 163	65187	Exhaust Port Temperature 1	EPT1	No	1939-71
0 254 164	65188	Engine Temperature 2	ET2	No	1939-71
0 254 165	65189	Intake Manifold Information 2	IMT2	No	1939-71
0 254 166	65190	Intake Manifold Information 1	IMT1	No	1939-71
0 254 167	65191	Alternator Temperature	AT	No	1939-71
0 254 168	65192	Articulation Control	AC	No	1939-71
0 254 169	65193	Exhaust Oxygen 1	EO1	No	1939-71
0 254 170	65194	Alternate Fuel 2	AF2	No	1939-71
0 254 171	65195	Electronic Transmission Controller 6	ETC6	No	1939-71
0 254 172	65196	Wheel Brake Lining Remaining Information	EBC4	No	1939-71
0 254 173	65197	Wheel Application Pressure High Range Information	EBC3	No	1939-71

0 254 174	65198	Air Supply Pressure	AIR1	No	1939-71
0 254 175	65199	Fuel Consumption (Gaseous)	GFC	No	1939-71
0 254 176	65200	Trip Time Information 2	TTI2	No	1939-71
0 254 177	65201	ECU History	EH	No	1939-71
0 254 178	65202	Fuel Information 1 (Gaseous)	GFI1	No	1939-71
0 254 179	65203	Fuel Information (Liquid)	LFI	No	1939-71
0 254 180	65204	Trip Time Information 1	TTI1	No	1939-71
0 254 181	65205	Trip Shutdown Information	TSI	No	1939-71
0 254 182	65206	Trip Vehicle Speed/Cruise Distance Information	TVI	No	1939-71
0 254 183	65207	Engine Speed/Load Factor Information	LF	No	1939-71
0 254 184	65208	Trip Fuel Information (Gaseous)	GTFI	No	1939-71
0 254 185	65209	Trip Fuel Information (Liquid)	LTFI	No	1939-71
0 254 186	65210	Trip Distance Information	TDI	No	1939-71
0 254 187	65211	Trip Fan Information	TFI	No	1939-71
0 254 188	65212	Compression/Service Brake Information	CBI	No	1939-71
0 254 189	65213	Fan Drive	FD	No	1939-71
Parameter group that transfers status and measured information on the engine coolant fan					
0 254 190	65214	Electronic Engine Controller 4	EEC4	No	1939-71
0 254 191	65215	Wheel Speed Information	EBC2	No	1939-71
0 254 192	65216	Service Information	SERV	Yes	1939-71
0 254 193	65217	High-Resolution Vehicle Distance	VDHR	No	1939-71
0 254 194	65218	Electronic Retarder Controller 2	ERC2	No	1939-71
0 254 195	65219	Electronic Transmission Controller 5	ETC5	No	1939-71
0 254 196	65220	ISO 11992	EBS22	No	ISO 11992
0 254 197	65221	Electronic Transmission Controller 4	ETC4	No	1939-71
0 254 198	65222	ISO 11992	EBS23	No	ISO 11992

0 254 199	65223	Electronic Transmission Controller 3	ETC3	No	1939-71
0 254 200	65224	ISO 11992	GFM24	No	ISO 11992
0 254 201	65225	ISO 11992	EBS12	No	ISO 11992
0 254 202	65226	Diagnostic Message #1 Active Diagnostic Trouble Codes	DM1	Yes	1939-73
0 254 203	65227	Diagnostic Message #2	DM2	Yes	1939-73
0 254 204	65228	Diagnostic Message #3	DM3	No	1939-73
0 254 205	65229	Diagnostic Message #4	DM4	Yes	1939-73
0 254 206	65230	Diagnostic Message #5	DM5	Yes	1939-73
0 254 207	65231	Diagnostic Message #6	DM6	Yes	1939-73
0 254 208	65232	Diagnostic Message #8	DM8	Yes	1939-73
0 254 209	65233	Oxygen Sensor Test Results	DM9	No	1939-73
0 254 210	65234	Diagnostic Message #10	DM10	No	1939-73
0 254 211	65235	Diagnostic Message #11	DM11	No	1939-73
0 254 212	65236	Diagnostic Message #12	DM12	Yes	1939-73
0 254 213	65237	Alternator Speed	AS	No	1939-71
0 254 214	65238	Reserved for Network Management	RESV1	No	ISO 11783-5
0 254 215	65239	Reserved	RESV2	No	ISO 11783-5
0 254 216	65240	Commanded Address	CA	Yes	ISO 11783-5
0 254 217	65241	Auxiliary Input/Output Status	AUXIO	No	1939-71
0 254 218	65242	Software Identification	SOFT	Yes	1939-71
0 254 219	65243	Engine Fluid Level/Pressure 2	EFL/P2	No	1939-71
0 254 220	65244	Idle Operation	IO	Yes	1939-71
0 254 221	65245	Turbocharger	TC	No	1939-71
0 254 222	65246	Air Start Pressure	AIR2	No	1939-71
0 254 223	65247	Electronic Engine Controller 3	EEC3	No	1939-71

0 254 224	65248	Vehicle Distance	VD	No	1939-71	Total message length depends on total number of forward and reverse gear ratios.
0 254 225	65249	Retarder Configuration	RC	Yes	1939-71	
0 254 226	65250	Transmission Configuration	TCFG	Yes	1939-71	
0 254 227	65251	Engine Configuration	EC	Yes	1939-71	Engine configuration information
0 254 228	65252	Shutdown	SHUTDOWN	No	1939-71	
0 254 229	65253	Engine Hours, Revolutions	HOURS	No	1939-71	
0 254 230	65254	Time/Date	TD	No	1939-71	
0 254 231	65255	Vehicle Hours	VH	No	1939-71	
0 254 232	65256	Vehicle Direction/Speed	VDS	No	1939-71	
0 254 233	65257	Fuel Consumption (Liquid)	LFC	No	1939-71	
0 254 234	65258	Vehicle Weight	WV	No	1939-71	
0 254 235	65259	Component Identification	CI	Yes	1939-71	
0 254 236	65260	Vehicle Identification	VI	Yes	1939-71	
0 254 237	65261	Cruise Control/Vehicle Speed Setup	CCSS	No	1939-71	
0 254 238	65262	Engine Temperature 1	ET1	No	1939-71	
0 254 239	65263	Engine Fluid Level/Pressure 1	EFL/P1	No	1939-71	
0 254 240	65264	Power Take-off Information	PTO	No	1939-71	
0 254 241	65265	Cruise Control/Vehicle Speed	CCVS	No	1939-71	
0 254 242	65266	Fuel Economy (Liquid)	LFE	No	1939-71	
0 254 243	65267	Vehicle Position	VP	No	1939-71	
0 254 244	65268	Tyre Condition	TYRE	No	1939-71	
0 254 245	65269	Ambient Conditions	AMB	No	1939-71	Tyre condition message
0 254 246	65270	Inlet/Exhaust Conditions 1	IC1	No	1939-71	
0 254 247	65271	Vehicle Electrical Power	VEP	No	1939-71	
0 254 248	65272	Transmission Fluids	TF	No	1939-71	

Item	Requirement	Proposed Solution	ISO Standard
Axle information message	AI	No	ISO 11783-3
	B	No	ISO 11783-3
	RF	No	ISO 11783-3
	DD	No	ISO 11783-3
	A1	No	ISO 11783-3
	AWPP	No	ISO 11783-3
Water Pump Pressure Indicator	WFI	No	ISO 11783-3
	PropB_00	Yes	ISO 11783-3
	PropB_01	Yes	ISO 11783-3
	PropB_02	Yes	ISO 11783-3
	PropB_03	Yes	ISO 11783-3
	PropB_04	Yes	ISO 11783-3
	PropB_05	Yes	ISO 11783-3
	PropB_06	Yes	ISO 11783-3
	PropB_07	Yes	ISO 11783-3
	PropB_08	Yes	ISO 11783-3
	PropB_09	Yes	ISO 11783-3
	PropB_0A	Yes	ISO 11783-3
	PropB_0B	Yes	ISO 11783-3
	PropB_0C	Yes	ISO 11783-3
	PropB_0D	Yes	ISO 11783-3
	PropB_0E	Yes	ISO 11783-3
	PropB_0F	Yes	ISO 11783-3
	PropB_10	Yes	ISO 11783-3

0	255	19	65299	Proprietary B	PropB_13	Yes	ISO 11783-3
0	255	20	65300	Proprietary B	PropB_14	Yes	ISO 11783-3
0	255	21	65301	Proprietary B	PropB_15	Yes	ISO 11783-3
0	255	22	65302	Proprietary B	PropB_16	Yes	ISO 11783-3
0	255	23	65303	Proprietary B	PropB_17	Yes	ISO 11783-3
0	255	24	65304	Proprietary B	PropB_18	Yes	ISO 11783-3
0	255	25	65305	Proprietary B	PropB_19	Yes	ISO 11783-3
0	255	26	65306	Proprietary B	PropB_1A	Yes	ISO 11783-3
0	255	27	65307	Proprietary B	PropB_1B	Yes	ISO 11783-3
0	255	28	65308	Proprietary B	PropB_1C	Yes	ISO 11783-3
0	255	29	65309	Proprietary B	PropB_1D	Yes	ISO 11783-3
0	255	30	65310	Proprietary B	PropB_1E	Yes	ISO 11783-3
0	255	31	65311	Proprietary B	PropB_1F	Yes	ISO 11783-3
0	255	32	65312	Proprietary B	PropB_20	Yes	ISO 11783-3
0	255	33	65313	Proprietary B	PropB_21	Yes	ISO 11783-3
0	255	34	65314	Proprietary B	PropB_22	Yes	ISO 11783-3
0	255	35	65315	Proprietary B	PropB_23	Yes	ISO 11783-3
0	255	36	65316	Proprietary B	PropB_24	Yes	ISO 11783-3
0	255	37	65317	Proprietary B	PropB_25	Yes	ISO 11783-3
0	255	38	65318	Proprietary B	PropB_26	Yes	ISO 11783-3
0	255	39	65319	Proprietary B	PropB_27	Yes	ISO 11783-3
0	255	40	65320	Proprietary B	PropB_28	Yes	ISO 11783-3
0	255	41	65321	Proprietary B	PropB_29	Yes	ISO 11783-3
0	255	42	65322	Proprietary B	PropB_2A	Yes	ISO 11783-3
0	255	43	65323	Proprietary B	PropB_2B	Yes	ISO 11783-3
0	255	44	65324	Proprietary B	PropB_2C	Yes	ISO 11783-3

0	255 45	65325	Proprietary B	PropB_2D	Yes	ISO 11783-3
0	255 46	65326	Proprietary B	PropB_2E	Yes	ISO 11783-3
0	255 47	65327	Proprietary B	PropB_2F	Yes	ISO 11783-3
0	255 48	65328	Proprietary B	PropB_30	Yes	ISO 11783-3
0	255 49	65329	Proprietary B	PropB_31	Yes	ISO 11783-3
0	255 50	65330	Proprietary B	PropB_32	Yes	ISO 11783-3
0	255 51	65331	Proprietary B	PropB_33	Yes	ISO 11783-3
0	255 52	65332	Proprietary B	PropB_34	Yes	ISO 11783-3
0	255 53	65333	Proprietary B	PropB_35	Yes	ISO 11783-3
0	255 54	65334	Proprietary B	PropB_36	Yes	ISO 11783-3
0	255 55	65335	Proprietary B	PropB_37	Yes	ISO 11783-3
0	255 56	65336	Proprietary B	PropB_38	Yes	ISO 11783-3
0	255 57	65337	Proprietary B	PropB_39	Yes	ISO 11783-3
0	255 58	65338	Proprietary B	PropB_3A	Yes	ISO 11783-3
0	255 59	65339	Proprietary B	PropB_3B	Yes	ISO 11783-3
0	255 60	65340	Proprietary B	PropB_3C	Yes	ISO 11783-3
0	255 61	65341	Proprietary B	PropB_3D	Yes	ISO 11783-3
0	255 62	65342	Proprietary B	PropB_3E	Yes	ISO 11783-3
0	255 63	65343	Proprietary B	PropB_3F	Yes	ISO 11783-3
0	255 64	65344	Proprietary B	PropB_40	Yes	ISO 11783-3
0	255 65	65345	Proprietary B	PropB_41	Yes	ISO 11783-3
0	255 66	65346	Proprietary B	PropB_42	Yes	ISO 11783-3
0	255 67	65347	Proprietary B	PropB_43	Yes	ISO 11783-3
0	255 68	65348	Proprietary B	PropB_44	Yes	ISO 11783-3
0	255 69	65349	Proprietary B	PropB_45	Yes	ISO 11783-3
0	255 70	65350	Proprietary B	PropB_46	Yes	ISO 11783-3

0	255 71	65351	Proprietary B	PropB_47	Yes	ISO 11783-3
0	255 72	65352	Proprietary B	PropB_48	Yes	ISO 11783-3
0	255 73	65353	Proprietary B	PropB_49	Yes	ISO 11783-3
0	255 74	65354	Proprietary B	PropB_4A	Yes	ISO 11783-3
0	255 75	65355	Proprietary B	PropB_4B	Yes	ISO 11783-3
0	255 76	65356	Proprietary B	PropB_4C	Yes	ISO 11783-3
0	255 77	65357	Proprietary B	PropB_4D	Yes	ISO 11783-3
0	255 78	65358	Proprietary B	PropB_4E	Yes	ISO 11783-3
0	255 79	65359	Proprietary B	PropB_4F	Yes	ISO 11783-3
0	255 80	65360	Proprietary B	PropB_50	Yes	ISO 11783-3
0	255 81	65361	Proprietary B	PropB_51	Yes	ISO 11783-3
0	255 82	65362	Proprietary B	PropB_52	Yes	ISO 11783-3
0	255 83	65363	Proprietary B	PropB_53	Yes	ISO 11783-3
0	255 84	65364	Proprietary B	PropB_54	Yes	ISO 11783-3
0	255 85	65365	Proprietary B	PropB_55	Yes	ISO 11783-3
0	255 86	65366	Proprietary B	PropB_56	Yes	ISO 11783-3
0	255 87	65367	Proprietary B	PropB_57	Yes	ISO 11783-3
0	255 88	65368	Proprietary B	PropB_58	Yes	ISO 11783-3
0	255 89	65369	Proprietary B	PropB_59	Yes	ISO 11783-3
0	255 90	65370	Proprietary B	PropB_5A	Yes	ISO 11783-3
0	255 91	65371	Proprietary B	PropB_5B	Yes	ISO 11783-3
0	255 92	65372	Proprietary B	PropB_5C	Yes	ISO 11783-3
0	255 93	65373	Proprietary B	PropB_5D	Yes	ISO 11783-3
0	255 94	65374	Proprietary B	PropB_5E	Yes	ISO 11783-3
0	255 95	65375	Proprietary B	PropB_5F	Yes	ISO 11783-3
0	255 96	65376	Proprietary B	PropB_60	Yes	ISO 11783-3

0 255 97	65377	Proprietary B	PropB_61	Yes	ISO 11783-3
0 255 99	65379	Proprietary B	PropB_63	Yes	ISO 11783-3
0 255 100	65380	Proprietary B	PropB_64	Yes	ISO 11783-3
0 255 101	65381	Proprietary B	PropB_65	Yes	ISO 11783-3
0 255 102	65382	Proprietary B	PropB_66	Yes	ISO 11783-3
0 255 103	65383	Proprietary B	PropB_67	Yes	ISO 11783-3
0 255 104	65384	Proprietary B	PropB_68	Yes	ISO 11783-3
0 255 105	65385	Proprietary B	PropB_69	Yes	ISO 11783-3
0 255 106	65386	Proprietary B	PropB_6A	Yes	ISO 11783-3
0 255 107	65387	Proprietary B	PropB_6B	Yes	ISO 11783-3
0 255 108	65388	Proprietary B	PropB_6C	Yes	ISO 11783-3
0 255 109	65389	Proprietary B	PropB_6D	Yes	ISO 11783-3
0 255 110	65390	Proprietary B	PropB_6E	Yes	ISO 11783-3
0 255 111	65391	Proprietary B	PropB_6F	Yes	ISO 11783-3
0 255 112	65392	Proprietary B	PropB_70	Yes	ISO 11783-3
0 255 113	65393	Proprietary B	PropB_71	Yes	ISO 11783-3
0 255 114	65394	Proprietary B	PropB_72	Yes	ISO 11783-3
0 255 115	65395	Proprietary B	PropB_73	Yes	ISO 11783-3
0 255 116	65396	Proprietary B	PropB_74	Yes	ISO 11783-3
0 255 117	65397	Proprietary B	PropB_75	Yes	ISO 11783-3
0 255 118	65398	Proprietary B	PropB_76	Yes	ISO 11783-3
0 255 119	65399	Proprietary B	PropB_77	Yes	ISO 11783-3
0 255 120	65400	Proprietary B	PropB_78	Yes	ISO 11783-3
0 255 121	65401	Proprietary B	PropB_79	Yes	ISO 11783-3
0 255 122	65402	Proprietary B	PropB_7A	Yes	ISO 11783-3
0 255 123	65403	Proprietary B	PropB_7B	Yes	ISO 11783-3

0	255 124	65404	Proprietary B	PropB_7C	Yes	ISO 11783-3
0	255 125	65405	Proprietary B	PropB_7D	Yes	ISO 11783-3
0	255 126	65406	Proprietary B	PropB_7E	Yes	ISO 11783-3
0	255 127	65407	Proprietary B	PropB_7F	Yes	ISO 11783-3
0	255 128	65408	Proprietary B	PropB_80	Yes	ISO 11783-3
0	255 129	65409	Proprietary B	PropB_81	Yes	ISO 11783-3
0	255 130	65410	Proprietary B	PropB_82	Yes	ISO 11783-3
0	255 131	65411	Proprietary B	PropB_83	Yes	ISO 11783-3
0	255 132	65412	Proprietary B	PropB_84	Yes	ISO 11783-3
0	255 133	65413	Proprietary B	PropB_85	Yes	ISO 11783-3
0	255 134	65414	Proprietary B	PropB_86	Yes	ISO 11783-3
0	255 135	65415	Proprietary B	PropB_87	Yes	ISO 11783-3
0	255 136	65416	Proprietary B	PropB_88	Yes	ISO 11783-3
0	255 137	65417	Proprietary B	PropB_89	Yes	ISO 11783-3
0	255 138	65418	Proprietary B	PropB_8A	Yes	ISO 11783-3
0	255 139	65419	Proprietary B	PropB_8B	Yes	ISO 11783-3
0	255 140	65420	Proprietary B	PropB_8C	Yes	ISO 11783-3
0	255 141	65421	Proprietary B	PropB_8D	Yes	ISO 11783-3
0	255 142	65422	Proprietary B	PropB_8E	Yes	ISO 11783-3
0	255 143	65423	Proprietary B	PropB_8F	Yes	ISO 11783-3
0	255 144	65424	Proprietary B	PropB_90	Yes	ISO 11783-3
0	255 145	65425	Proprietary B	PropB_91	Yes	ISO 11783-3
0	255 146	65426	Proprietary B	PropB_92	Yes	ISO 11783-3
0	255 147	65427	Proprietary B	PropB_93	Yes	ISO 11783-3
0	255 148	65428	Proprietary B	PropB_94	Yes	ISO 11783-3
0	255 149	65429	Proprietary B	PropB_95	Yes	ISO 11783-3

0 255 150	65430	Proprietary B	PropB_96	Yes	ISO 11783-3
0 255 151	65431	Proprietary B	PropB_97	Yes	ISO 11783-3
0 255 152	65432	Proprietary B	PropB_98	Yes	ISO 11783-3
0 255 153	65433	Proprietary B	PropB_99	Yes	ISO 11783-3
0 255 154	65434	Proprietary B	PropB_9A	Yes	ISO 11783-3
0 255 155	65435	Proprietary B	PropB_9B	Yes	ISO 11783-3
0 255 156	65436	Proprietary B	PropB_9C	Yes	ISO 11783-3
0 255 157	65437	Proprietary B	PropB_9D	Yes	ISO 11783-3
0 255 158	65438	Proprietary B	PropB_9E	Yes	ISO 11783-3
0 255 159	65439	Proprietary B	PropB_9F	Yes	ISO 11783-3
0 255 160	65440	Proprietary B	PropB_A0	Yes	ISO 11783-3
0 255 161	65441	Proprietary B	PropB_A1	Yes	ISO 11783-3
0 255 162	65442	Proprietary B	PropB_A2	Yes	ISO 11783-3
0 255 163	65443	Proprietary B	PropB_A3	Yes	ISO 11783-3
0 255 164	65444	Proprietary B	PropB_A4	Yes	ISO 11783-3
0 255 165	65445	Proprietary B	PropB_A5	Yes	ISO 11783-3
0 255 166	65446	Proprietary B	PropB_A6	Yes	ISO 11783-3
0 255 167	65447	Proprietary B	PropB_A7	Yes	ISO 11783-3
0 255 168	65448	Proprietary B	PropB_A8	Yes	ISO 11783-3
0 255 169	65449	Proprietary B	PropB_A9	Yes	ISO 11783-3
0 255 170	65450	Proprietary B	PropB_AA	Yes	ISO 11783-3
0 255 171	65451	Proprietary B	PropB_AB	Yes	ISO 11783-3
0 255 172	65452	Proprietary B	PropB_AC	Yes	ISO 11783-3
0 255 173	65453	Proprietary B	PropB_AD	Yes	ISO 11783-3
0 255 174	65454	Proprietary B	PropB_AE	Yes	ISO 11783-3
0 255 175	65455	Proprietary B	PropB_AF	Yes	ISO 11783-3

0	255 176	65456	Proprietary B	PropB_B0	Yes	ISO 11783-3
0	255 177	65457	Proprietary B	PropB_B1	Yes	ISO 11783-3
0	255 178	65458	Proprietary B	PropB_B2	Yes	ISO 11783-3
0	255 179	65459	Proprietary B	PropB_B3	Yes	ISO 11783-3
0	255 180	65460	Proprietary B	PropB_B4	Yes	ISO 11783-3
0	255 181	65461	Proprietary B	PropB_B5	Yes	ISO 11783-3
0	255 182	65462	Proprietary B	PropB_B6	Yes	ISO 11783-3
0	255 183	65463	Proprietary B	PropB_B7	Yes	ISO 11783-3
0	255 184	65464	Proprietary B	PropB_B8	Yes	ISO 11783-3
0	255 185	65465	Proprietary B	PropB_B9	Yes	ISO 11783-3
0	255 186	65466	Proprietary B	PropB_BA	Yes	ISO 11783-3
0	255 187	65467	Proprietary B	PropB_BB	Yes	ISO 11783-3
0	255 188	65468	Proprietary B	PropB_BC	Yes	ISO 11783-3
0	255 189	65469	Proprietary B	PropB_BD	Yes	ISO 11783-3
0	255 190	65470	Proprietary B	PropB_BE	Yes	ISO 11783-3
0	255 191	65471	Proprietary B	PropB_BF	Yes	ISO 11783-3
0	255 192	65472	Proprietary B	PropB_C0	Yes	ISO 11783-3
0	255 193	65473	Proprietary B	PropB_C1	Yes	ISO 11783-3
0	255 194	65474	Proprietary B	PropB_C2	Yes	ISO 11783-3
0	255 195	65475	Proprietary B	PropB_C3	Yes	ISO 11783-3
0	255 196	65476	Proprietary B	PropB_C4	Yes	ISO 11783-3
0	255 197	65477	Proprietary B	PropB_C5	Yes	ISO 11783-3
0	255 198	65478	Proprietary B	PropB_C6	Yes	ISO 11783-3
0	255 199	65479	Proprietary B	PropB_C7	Yes	ISO 11783-3
0	255 200	65480	Proprietary B	PropB_C8	Yes	ISO 11783-3
0	255 201	65481	Proprietary B	PropB_C9	Yes	ISO 11783-3

0	255 202	65482	Proprietary B	PropB_CA	Yes	ISO 11783-3
0	255 203	65483	Proprietary B	PropB_CB	Yes	ISO 11783-3
0	255 204	65484	Proprietary B	PropB_CC	Yes	ISO 11783-3
0	255 205	65485	Proprietary B	PropB_CD	Yes	ISO 11783-3
0	255 206	65486	Proprietary B	PropB_CE	Yes	ISO 11783-3
0	255 207	65487	Proprietary B	PropB_CF	Yes	ISO 11783-3
0	255 208	65488	Proprietary B	PropB_D0	Yes	ISO 11783-3
0	255 209	65489	Proprietary B	PropB_D1	Yes	ISO 11783-3
0	255 210	65490	Proprietary B	PropB_D2	Yes	ISO 11783-3
0	255 211	65491	Proprietary B	PropB_D3	Yes	ISO 11783-3
0	255 212	65492	Proprietary B	PropB_D4	Yes	ISO 11783-3
0	255 213	65493	Proprietary B	PropB_D5	Yes	ISO 11783-3
0	255 214	65494	Proprietary B	PropB_D6	Yes	ISO 11783-3
0	255 215	65495	Proprietary B	PropB_D7	Yes	ISO 11783-3
0	255 216	65496	Proprietary B	PropB_D8	Yes	ISO 11783-3
0	255 217	65497	Proprietary B	PropB_D9	Yes	ISO 11783-3
0	255 218	65498	Proprietary B	PropB_DA	Yes	ISO 11783-3
0	255 219	65499	Proprietary B	PropB_DB	Yes	ISO 11783-3
0	255 220	65500	Proprietary B	PropB_DC	Yes	ISO 11783-3
0	255 221	65501	Proprietary B	PropB_DD	Yes	ISO 11783-3
0	255 222	65502	Proprietary B	PropB_DE	Yes	ISO 11783-3
0	255 223	65503	Proprietary B	PropB_DF	Yes	ISO 11783-3
0	255 224	65504	Proprietary B	PropB_E0	Yes	ISO 11783-3
0	255 225	65505	Proprietary B	PropB_E1	Yes	ISO 11783-3
0	255 226	65506	Proprietary B	PropB_E2	Yes	ISO 11783-3
0	255 227	65507	Proprietary B	PropB_E3	Yes	ISO 11783-3

0	255 228	65508	Proprietary B	PropB_E4	Yes	ISO 11783-3
0	255 229	65509	Proprietary B	PropB_E5	Yes	ISO 11783-3
0	255 230	65510	Proprietary B	PropB_E6	Yes	ISO 11783-3
0	255 231	65511	Proprietary B	PropB_E7	Yes	ISO 11783-3
0	255 232	65512	Proprietary B	PropB_E8	Yes	ISO 11783-3
0	255 233	65513	Proprietary B	PropB_E9	Yes	ISO 11783-3
0	255 234	65514	Proprietary B	PropB_EA	Yes	ISO 11783-3
0	255 235	65515	Proprietary B	PropB_EB	Yes	ISO 11783-3
0	255 236	65516	Proprietary B	PropB_EC	Yes	ISO 11783-3
0	255 237	65517	Proprietary B	PropB_ED	Yes	ISO 11783-3
0	255 238	65518	Proprietary B	PropB_EE	Yes	ISO 11783-3
0	255 239	65519	Proprietary B	PropB_EF	Yes	ISO 11783-3
0	255 240	65520	Proprietary B	PropB_F0	Yes	ISO 11783-3
0	255 241	65521	Proprietary B	PropB_F1	Yes	ISO 11783-3
0	255 242	65522	Proprietary B	PropB_F2	Yes	ISO 11783-3
0	255 243	65523	Proprietary B	PropB_F3	Yes	ISO 11783-3
0	255 244	65524	Proprietary B	PropB_F4	Yes	ISO 11783-3
0	255 245	65525	Proprietary B	PropB_F5	Yes	ISO 11783-3
0	255 246	65526	Proprietary B	PropB_F6	Yes	ISO 11783-3
0	255 247	65527	Proprietary B	PropB_F7	Yes	ISO 11783-3
0	255 248	65528	Proprietary B	PropB_F8	Yes	ISO 11783-3
0	255 249	65529	Proprietary B	PropB_F9	Yes	ISO 11783-3
0	255 250	65530	Proprietary B	PropB_FA	Yes	ISO 11783-3
0	255 251	65531	Proprietary B	PropB_FB	Yes	ISO 11783-3
0	255 252	65532	Proprietary B	PropB_FC	Yes	ISO 11783-3
0	255 253	65533	Proprietary B	PropB_FD	Yes	ISO 11783-3

1	242	5	127493	Transmission Parameters, Dynamic	No	IEC 61162-3	Provides the operational state and internal operating parameters of a specific transmission
1	242	9	127497	Trip Parameters	No	IEC 61162-3	Small craft trip engine hours and fuel consumption
1	242	10	127498	Engine Parameters, Static	No	IEC 61162-3	Provides identification information and rated engine speed for the engine indicated by the engine instance field
1	242	13	127501	Binary Switch Bank Status	No	IEC 61162-3	Universal status report for multiple banks of two-state indicators
1	242	14	127502	Switch Bank Control	No	IEC 61162-3	Universal commands to multiple banks of two-state controls
1	242	17	127505	Fluid Level	No	IEC 61162-3	Contains an instance number, level of fluid and type of fluid
1	242	20	127508	Battery Status	No	IEC 61162-3	Provides parametric data for a specific battery, indicated by the battery instance field
1	245	3	128259	Speed	No	IEC 61162-3	PGN to provide a single transmission that describes the motion of a vessel
1	245	11	128267	Water Depth	No	IEC 61162-3	Water depth relative to the transducer and offset of the measuring transducer
1	245	19	128275	Distance Log	No	IEC 61162-3	PGN to provide the cumulative voyage distance travelled since the last reset
1	246	8	128520	Tracked Target	No	IEC 61162-3	Data Message for reporting status and target data from tracking radar external units
1	248	1	129025	Position, Rapid Update	No	IEC 61162-3	PGN to provide latitude and longitude referenced to WGS-84
1	248	2	129026	COG & SOG, Rapid Update	No	IEC 61162-3	Single-frame PGN that provides course over ground (COG) and speed over ground (SOG)
1	248	5	129029	GNSS Position Data	No	IEC 61162-3	PGN conveying a comprehensive set of global navigation satellite system (GNSS) parameters, including position information
1	248	9	129033	Time & Date	No	IEC 61162-3	Single transmission PGN that provides UTC Time, UTC Date and local offset
1	248	20	129044	Datum	No	IEC 61162-3	Local geodetic datum and datum offsets from a reference datum
1	248	21	129045	User Datum Settings	No	IEC 61162-3	Transformation parameters for converting from WGS-84 to other datums
1	249	3	129283	Cross Track Error	No	IEC 61162-3	PGN providing the magnitude of position error perpendicular to the desired course

1	249	4	129284	Navigation Data	No	IEC 61162-3	PGN providing essential navigation data for a route following
1	249	11	129291	Set & Drift, Rapid Update	No	IEC 61162-3	Set and drift effect on the vessel is the direction and the speed of a current
1	249	21	129301	Time to/from Mark	No	IEC 61162-3	Time to go to or elapsed from a generic mark, that can be non-fixed
1	249	22	129302	Bearing and Distance between two Marks	No	IEC 61162-3	Bearing and distance from the origin mark to the destination mark, calculated at the origin mark, for any two arbitrary generic marks
1	250	2	129538	GNSS Control Status	No	IEC 61162-3	GNSS common satellite receiver parameter status
1	250	3	129539	GNSS DOPs	No	IEC 61162-3	PGN to provide a single transmission containing GNSS status and dilution of precision components (DOP)
1	250	4	129540	GNSS Sats in View	No	IEC 61162-3	GNSS information on current satellites in view tagged by sequence ID — information includes PRN, elevation, azimuth and SNR
1	250	5	129541	GPS Almanac Data	No	IEC 61162-3	PGN to provide a single transmission that contains relevant almanac data for GPS products
1	250	6	129542	GNSS Pseudo Range Noise Statistics	No	IEC 61162-3	GNSS pseudo-range measurement noise statistics can be translated in the position domain
1	250	9	129545	GNSS RAIM Output	No	IEC 61162-3	PGN used providing the output from a GNSS receiver's receiver autonomous integrity monitoring (RAIM) process
1	250	10	129546	GNSS RAIM Settings	No	IEC 61162-3	PGN used to report the control parameters for a GNSS RAIM process
1	250	11	129547	GNSS Pseudo Range Error Statistics	No	IEC 61162-3	APGN used to support RAIM
1	250	13	129549	DGNSS Corrections	No	IEC 61162-3	PGN providing a means to pass differential GNSS corrections between IEC 61162-3 units
1	250	14	129550	GNSS Differential Correction Receiver Interface	No	IEC 61162-3	GNSS common differential correction receiver parameter status
1	250	15	129551	GNSS Differential Correction Receiver Signal	No	IEC 61162-3	GNSS differential correction receiver status tagged by sequence ID
1	250	20	129556	GLONASS Almanac Data	No	IEC 61162-3	PGN providing a single transmission that contains relevant almanac data for GNSS products
1	251	7	129799	Radio Frequency/Mode/Power	No	IEC 61162-3	PGN providing status and control for a radiotelephone, connected to a IEC 61162-3 network

1	251	16	129808	DSC Call Information	No	IEC 61162-3	PGN providing digital selective calling (DSC) data according to ITU M.493-9 with optional expansion according to ITU M.821-1
1	252	4	130052	Loran-C TD Data	No	IEC 61162-3	PGN providing time difference (TD) lines of position of Loran-C signals relative to a single group repetition interval
1	252	5	130053	Loran-C Range Data	No	IEC 61162-3	PGN providing propagation times (Ranges) of Loran-C signals relative to a single group repetition interval
1	253	2	130306	Wind Data	No	IEC 61162-3	Direction and speed of wind
1	253	6	130054	Loran-C Signal Data	No	IEC 61162-3	SNR, ECD and ASF values of Loran-C signals
1	253	6	130310	Environmental Parameters	No	IEC 61162-3	Local atmospheric environmental conditions
1	253	16	130320	Tide Station Data	No	IEC 61162-3	Tide station measurement data including station location, numeric identifier and name
1	253	17	130321	Salinity Station Data	No	IEC 61162-3	Salinity station measurement data including station location, numeric identifier and name
1	253	18	130322	Current Station Data	No	IEC 61162-3	Current station measurement data including station location, numeric identifier and name
1	253	19	130323	Meteorological Station Data	No	IEC 61162-3	Meteorological station measurement data including station location, numeric identifier and name
1	253	20	130324	Moored Buoy Station Data	No	IEC 61162-3	Moored buoy measurement data including station location and numeric identifier
1	254	16	130576	Small Craft Status	No	IEC 61162-3	Provides data on various small craft control surfaces and speed through the water
1	254	7	130577	Direction Data	No	IEC 61162-3	PGN to group three fundamental vectors related to vessel motion
1	254	18	130578	Vessel Speed Components	No	IEC 61162-3	PGN providing a single transmission that accurately describes the speed of a vessel by component vectors

Annex B
(normative)

ISO 11783 Industry groups

Industry Group	Industry
0	Global, applies to all industries
1	On-highway equipment
2	Agricultural and forestry equipment
3	Construction equipment
4	Marine
5	Industrial/process control/stationary
6	Reserved for future assignment
7	Reserved for future assignment

Annex C (normative)

ISO 11783 Industry group 0 preferred addresses

SA	Function	Instance	ECU instance	Definition
0	Engine	0	0	First instance of a controller for the system's primary source of power
1	Engine	1	0	Second instance of a controller for the system's primary source of power
2	Turbo charger	0	0	
3	Transmission	0	0	First instance of a controller for the system's transmission
4	Transmission	1	0	Second instance of a controller for the system's transmission
5	Shift Console – Primary	0	0	
6	Shift Console – Secondary	1	0	
7	Power Take-Off – Rear or Primary	0	0	First instance of a controller for a power take-off
8	Axle – Steering	0	0	
9	Axle – Drive	0	0	
10	Axle – Drive	1	0	Second instance of a controller for the system's drive axle
11	Brakes – System Control	0	0	
12	Brakes – Steer Axle Control	0	0	
13	Brakes – Drive axle Control	0	0	
14	Brakes – Drive Axle Control	1	0	Second instance of a controller for the system's drive axle brakes
15	Retarder – Engine	0	0	Engine compression braking
16	Retarder – Driveline	0	0	

17	Cruise Control	0	0	0	Speed-based control
18	Fuel System	0	0	0	
19	Steering Control	0	0	0	
20	Suspension Control – Steer Axle	0	0	0	
21	Suspension Control – Drive Axle	0	0	0	
22	Suspension Control – Drive Axle	1	0	0	Second instance of a controller for the system's drive axle suspension
23	Instrument Cluster	0	0	0	Primary gauge display for a vehicle
24	Trip Recorder	0	0	0	
25	Climate Control	0	0	0	
26	Alternator/Electrical Charging Control	0	0	0	Vehicle's primary electrical or alternator charging controller — can be two different functions (alternator or electrical) that can share a preferred address
27	Aerodynamic Control	0	0	0	
28	Vehicle Navigation	0	0	0	
29	Vehicle Security	0	0	0	
30	Electrical Control	0	0	0	
31	Starter Control	0	0	0	
32	Tractor – Trailer (NIU)	0	0	0	Tractor mounted bridge (Gateway or Special NIU) leading to trailer(s)
33	Body Control	0	0	0	Controls the body (not the chassis or cab) functions
34	Auxiliary Valve Control	0	0	0	Controller for the tractor mounted auxiliary valves
35	Hitch Control – Rear	0	0	0	Controller for the hitch on the rear of the agriculture tractor
36	Power Take-Off Control – Front or Secondary	1	0	0	Second instance of a controller for a power take-off
37	Off Vehicle Gateway	0	0	0	
38	Virtual Terminal	0	0	0	
39	Management Computer #1	0	0	0	Manages vehicle systems, i.e. power train

40	Cab Display	0	0	0	First instance of a display other than instrument cluster and virtual terminal
41	Exhaust Retarder, Engine #1	0	0	0	First retarder instance on engine instance 1
42	Headway Control System	0	0	0	Forward-looking collision warning, collision avoidance, speed control or speed matching
43	On-board Diagnostic Unit	0	0	0	
44	Retarder, Exhaust, Engine #2	1	0	0	First instance of the exhaust retarder on the second engine or the second instance of exhaust retarder on the first engine
45	Endurance Braking Control	0	0	0	
46	Hydraulic Pump Control	0	0	0	
47	Suspension Control #1	0	0	0	First instance of the suspension controller (i.e. it is single valued)
48	Pneumatic Control	0	0	0	
49	Primary Cab Control	0	0	0	
50	Secondary Cab Control	1	0	0	Second instance of a controller for the system's cab
51	Tyre Pressure Control	0	0	0	
52	Ignition Control #1	0	0	0	First instance of the ignition control on the engine (i.e. it is single valued)
53	Ignition Control #2	1	0	0	First instance of the ignition control system on the second engine or the second instance of the ignition control system on the first engine
54	Seat #1 Control	0	0	0	First seat controller normally associated with the driver seat
55	Operator Controls – Lighting	0	0	0	
56	Rear Axle Steering Control #1	0	0	0	First instance of the rear axle controller system
57	Water Pump Control	0	0	0	

58	Climate Control #2	1	0	Second climate control system, if determined that the passenger climate control system has to be separated from the first control system (as opposed to being the second instance of the first control system). — Reference PA 25 — it is advisable to use the climate control system #1 (PA 25) with instances
59	Transmission #1 Primary Display	0	0	First instance of a display to operate with the primary transmission control
60	Transmission #2 Secondary Display	1	0	Second instance of a display to operate with the primary transmission control
61	Exhaust Emission Control	0	0	
62	Vehicle Dynamic Stability Control	0	0	
63	Oil System Monitor	0	0	
64	Suspension Control #2	0	0	First instance of the second suspension control system (i.e. it is single valued)
65	Information Control #1	0	0	Information management system, for the vehicle's application, such as transit passenger/fare monitoring, truck cargo management
66	Ramp Control	0	0	Controller for ramps, lifts or tailgates
67	Clutch/Converter Control	0	0	Controller of either the clutch and/or hydraulic torque converter
68	Auxiliary Heater Control #1	0	0	Can be air, water or other heater type and be using engine heat, electrical or fuel fired heating source
69	Auxiliary Heater Control #2	1	0	Can be air, water or other heater type and be using engine heat, electrical or fuel fired heating source
70	Engine Valve Control	0	0	Electronic control used to control actuation of engine intake and/or exhaust valves
71	Chassis Control	0	0	ECU for controlling the functions of the first chassis control system other than power train, body and cab functions (i.e. this is the first instance)
72	Chassis Control	1	0	ECU for controlling the functions of the second chassis control system other than power train, body and cab functions (i.e. this is the second instance)

73	Propulsion Battery Charger	0	0	0	A controller used to charge propulsion batteries in an electric vehicle from an off-board source of electrical energy
74	Communications, Cellular	0	0	0	Cellular communications unit
75	Communications, Satellite	0	0	0	Satellite communications unit
76	Communications, Radio	0	0	0	Radio communications unit
77	Operator Controls, Steering Column Unit	0	0	0	Unit that gathers the operator's inputs for the steering column
78	Fan Drive Control System	0	0	0	Controls the main cooling fan operation
79	Seat #2 Control	0	0	1	Second seat control normally associated with the passenger seat
80	Parking Brake Controller	0	0	0	Controller for the parking brake
83-127	Reserved for Future Assignment by ISO				
128-247	Industry Group Specific				See Annex D for agricultural and forestry equipment
248	File Server or Printer				
249	Off Board Diagnostic/Service Tool #1	0	0	0	
250	Off Board Diagnostic/Service Tool #2	1	0	0	
251	On-Board Data Logger	0	0	0	
252	Reserved for Experimental Use	0	0	0	
253	Reserved for OEM	0	0	0	
254	Null Address				
255	GLOBAL				All/any control function

Annex D (normative)

ISO 11783 Industry group 2 initial addresses

SA	Device	Instance	Function	Instance	ECU Instance	Definition
128 -238			Reserved for Future Assignment by ISO			All control functions in IG2 using initial addresses shall be self-configurable. IG2 control functions shall include the value of the first full 32 bits of NAME field.
239	0	0	Position Control	0	0	
240	0	0	Tractor ECU	0	0	Gateway between the tractor network and the implement network
241	7	0	Tailings Monitoring	0	0	
242	7	0	Header Control	0	0	
243	7	0	Product Loss Monitoring	0	0	
244	7	0	Product Moisture Sensing	0	0	
245	0	0	Non-Virtual Terminal Display (Implement Network)	0	0	Non-virtual terminal cab display connected to the implement network
246	0	0	Operator Controls – Machine Specific	0	0	
247	0	0	Task Control (Mapping Computer)	0	0	

Annex E (normative)

ISO 11783 NAMES

Value	Device	Value	Function	Description
0	Global	0	Non-specific systems	Industry non-specific
				Tool that is normally not permanently mounted on the vehicle and that supports the full set of diagnostic messages (services)
				Function for the collection and storage of data from the network that can or can not be permanently mounted on the vehicle; the data to be collected has in some fashion been identified to the unit
1	On-highway equipment	0	Non-specific systems	Industry non-specific
				Control of the articulation turntable for joined body buses

1	Tractor	Towing Vehicle System	131	Body to Vehicle Interface Control	Interface for managing interaction of vehicle functions and body functions; this can be a combination of body signals and gateway functionalities
			132–254	Reserved for Future Assignment	
			255	Not Available	
			0–127	See Annex F	
			128	Forward Road Image Processor	
2	Trailer	Towed Vehicle System	129–254	Reserved for Future Assignment	Industry non-specific This function determines the vehicle position from lane markings; only for performance, advisory and warning
			255	Not Available	
			0–127	See Annex F	
			128–254	Reserved for Future Assignment	
			255	Not Available	
2	Agriculture and forestry equipment	Non-specific systems	0–127	See Annex F	Industry non-specific Implement network Detection of non desirable objects in the product flow
			128	Non-Virtual Terminal Display	
			129	Operator Controls — Machine Specific	
			130	Task Control (Mapping Computer)	
			131	Position Control	
			132	Machine Control	
			133	Foreign Object Detection	
			134	Tractor ECU	
			135-254	Reserved for Future Assignment	
			255	Not Available	

1	Tractor	Towing Vehicle System	
		See Annex F	Industry non-specific
	0-127	Reserved for Future Assignment	
	128	Auxiliary Valve Control	Control of addressed tractor mounted auxiliary valves
	129	Rear Hitch Control	Control of the rear hitch of an agricultural tractor
	130	Front Hitch Control	Control of the front hitch of an agricultural tractor
	131	Tractor Machine Control	
	132	Reserved for Future Assignment	
	131-254	Reserved for Future Assignment	
	255	Not Available	
2	Tillage		
		See Annex F	Industry non-specific
	0-127	Reserved for Future Assignment	
	128-131	Tillage Machine Control	
	132	Reserved for Future Assignment	
	133-254	Reserved for Future Assignment	
	255	Not Available	
3	Secondary tillage		
		See Annex F	Industry non-specific
	0-127	Reserved for Future Assignment	
	128-131	Secondary Tillage Machine Control	
	132	Reserved for Future Assignment	
	133-254	Reserved for Future Assignment	
	255	Not Available	
4	Planters/seeders		
		See Annex F	Industry non-specific
	0-127	Seed Rate Control	
	128	Section On/Off Control	
	129	Reserved for Future Assignment	
	130-131	Planters/Seeders Machine Control	
	132		

5 Fertilizers		Industry non-specific
133	Product Flow	
134	Product Level	
135–254	Reserved for Future Assignment	
255	Not Available	
6 Sprayers		Industry non-specific
0–127	See Annex F	
128	Spray Rate Control	
129	Section On/Off Control	
130–131	Reserved for Future Assignment	
132	Fertilizers Machine Control	
133	Product Flow	
134	Product Level	
135–254	Reserved for Future Assignment	
255	Not Available	
0–127	See Annex F	
128	Spray Rate Control	
129	Section On/Off Control	
130	Product Pressure	
131	Reserved for Future Assignment	
132	Sprayers Machine Control	
133	Product Flow	
134	Product Level	
135–254	Reserved for Future Assignment	
255	Not Available	

7	Harvesters	Industry non-specific	0-127	See Annex F	
			128	Tailing Monitor	
			129	Header Control	
			130	Product Loss Monitor	
			131	Product Moisture Sensor	
			132	Harvester Machine Control	
			133	Product Flow	
			134	Product Level	
			135-254	Reserved for Future Assignment	
			255	Not Available	
8	Root harvesters	Industry non-specific	0-127	See Annex F	
			128-131	Reserved for Future Assignment	
			132	Root Harvesters Machine Control	
			133	Product Flow	
			134	Product Level	
			135-254	Reserved for Future Assignment	
			255	Not Available	
9	Forage	Industry non-specific	0-127	See Annex F	
			128	Twine Wrapper Control	
			129-131	Reserved for Future Assignment	
			132	Forage Machine Control	
			133	Product Flow	
			134-254	Reserved for Future Assignment	
			255	Not Available	

10	Irrigation	0-127 128-254 255	See Annex F Reserved for Future Assignment Not Available	Industry non-specific
11	Transport/trailer	0-127 128-254 255	Towed Vehicle System See Annex F Reserved for Future Assignment Not Available	Industry non-specific
12	Farm yard operations	0-127 128-254 255	See Annex F Reserved for Future Assignment Not Available	Industry non-specific
13	Powered auxiliary devices	0-127 128-254 255	See Annex F Reserved for Future Assignment Not Available	Industry non-specific
14	Special crops	0-127 128-254 255	See Annex F Reserved for Future Assignment Not Available	Industry non-specific
15	Earthworks	0-127 128-254 255	See Annex F Reserved for Future Assignment Not Available	Industry non-specific
16	Skidder	0-127	See Annex F	Industry non-specific

17	Sensor systems	128–254	Reserved for Future Assignment	Industry non-specific
		255	Not Available	
0	Non-specific systems	0–127	See Annex F	Industry non-specific
		128–132	Reserved for Future Assignment	
3	Construction equipment	133	Product Flow	Industry non-specific
		134–254	Reserved for Future Assignment	
0	Non-specific systems	255	Not Available	Industry non-specific
		0–127	See Annex F	
128	Construction equipment	128	Supplemental Engine Control Sensing	Industry non-specific
		129	Laser Receiver	
130	Construction equipment	130	Single Land Levelling System Operator Interface	Industry non-specific
		131	Land Levelling Electric Mast	
132	Construction equipment	132	Single Land Levelling System Supervisor	Industry non-specific
		133	Land Levelling System Display	
134	Construction equipment	134	Laser Tracer	Industry non-specific
		135	Loader Control	
136	Construction equipment	136	Slope Sensor	Industry non-specific
		137	Lift arm Control	
138	Construction equipment	138	Supplemental Sensor Processing Units	Industry non-specific
		139	Hydraulic System Planner	

1	Skid steer loader	140	Hydraulic Valve Controller	The valve controller will typically control the flow of oil to a specific cylinder
		141	Joystick Control	Joystick control
		142–254	Reserved for Future Assignment	
		255	Not Available	
2	Articulated dump truck	128	Main Controller	
		129–254	Reserved for Future Assignment	
		255	Not Available	
3	Backhoe	128–254	Reserved for Future Assignment	
		255	Not Available	
4	Crawler	128–254	Reserved for Future Assignment	
		255	Not Available	
5	Excavator	128–254	Reserved for Future Assignment	
		255	Not Available	
6	Forklift	128–254	Reserved for Future Assignment	
		255	Not Available	
7	Four wheel drive loader	128–254	Reserved for Future Assignment	
		255	Not Available	

8	Grader	128	HFWD Controller	Hydraulic front wheel drive controller
		129–254	Reserved for Future Assignment	
		255	Not Available	
9-254	Reserved for Future Assignment	128–254	Reserved for Future Assignment	
		255	Not Available	
127	Not Available	128–254	Reserved for Future Assignment	
		255	Not Available	
4	Marine	0	Non-specific systems	
		0–127	See Annex F	Industry non-specific
		128	Marine Engines Alarm System	ECU that controls the Alarm functions on an engine of a Marine System
		129	Marine Engines Protection System	First ECU that controls the Protection functions on the first engine of a Marine System
		130	Marine Engines Protection System Display	ECU that provides the display of information and/or indicators associated specifically with the protection system on an engine of a Marine System
		131–254	Reserved for Future Assignment	
		255	Not Available	
10	System tools	0–127	See Annex F	Industry non-specific
		128-254	Reserved for Future Assignment	
		255	Not Available	

20	Safety systems	0–127 128–254 255	See Annex F Reserved for Future Assignment Not Available	Industry non-specific
25	Gateway	0–9 10 11–127 128–254 255	See Annex F Gateway See Annex F Reserved for Future Assignment Not Available	Industry non-specific Industry non-specific
30	Power management and lighting systems	0–127 128–129 130 131–139 140 141–254 255	See Annex F Reserved for Future Assignment Switch Reserved for Future Assignment Load Reserved for Future Assignment Not Available	Industry non-specific
40	Steering systems	0–127 128–129 130 131–139 140 141–149 150	See Annex F Reserved for Future Assignment Follow-up Controller Reserved for Future Assignment Mode Controller Reserved for Future Assignment Automatic Steering Controller	Industry non-specific

151–159	Reserved for Future Assignment	Industry non-specific
160	Heading Sensors	
161–254	Reserved for Future Assignment	
255	Not Available	
50	Propulsion systems	
0–127	See Annex F	
128–129	Reserved for Future Assignment	
130	Engine room monitoring	
131–139	Reserved for Future Assignment	
140	Engine Interface	
141–149	Reserved for Future Assignment	
150	Engine Controller	
151–159	Reserved for Future Assignment	
160	Engine Gateway	
161–169	Reserved for Future Assignment	
170	Control Head	
171–179	Reserved for Future Assignment	
180	Actuator	
181–189	Reserved for Future Assignment	
190	Gauge Interface	
191–199	Reserved for Future Assignment	
200	Gauge Large	
201–209	Reserved for Future Assignment	
210	Gauge Small	
211–254	Reserved for Future Assignment	
255	Not Available	

60 Navigation systems

		Industry non-specific
0–127	See Annex F	
128–129	Reserved for Future Assignment	
130	Sounder, depth	
131–139	Reserved for Future Assignment	
140	Reserved for Future Assignment	
141–144	Reserved for Future Assignment	
145	Global Navigation Satellite System (GNSS)	
146–149	Reserved for Future Assignment	
150	Loran C	
151–155	Reserved for Future Assignment	
155	Speed Sensors	
156–159	Reserved for Future Assignment	
160	Turn Rate Indicator	
161–169	Reserved for Future Assignment	
170	Integrated Navigation	
171–199	Reserved for Future Assignment	
200	Radar and/or Radar Plotting	
201–204	Reserved for Future Assignment	
205	Electronic Chart Display & Information System (ECDIS)	
206–209	Reserved for Future Assignment	
210	Electronic Chart System (ECS)	
211–219	Reserved for Future Assignment	
220	Direction Finder	
221–254	Reserved for Future Assignment	
255	Not Available	

70 Communications systems

		Industry non-specific
0–127	See Annex F	
128–129	Reserved for Future Assignment	
130	Emergency Position Indicating Beacon (EPIRB)	
131–139	Reserved for Future Assignment	
140	Automatic Identification System	
141–149	Reserved for Future Assignment	
150	Digital Selective Calling (DSC)	
151–159	Reserved for Future Assignment	
160	Data Receiver	
161–169	Reserved for Future Assignment	
170	Satellite	
171–179	Reserved for Future Assignment	
180	Radio-Telephone (MF/HF)	
181–189	Reserved for Future Assignment	
190	Radio-Telephone (VHF)	
191–254	Reserved for Future Assignment	
255	Not Available	

80 Instrumentation/general systems

		Industry non-specific
0–127	See Annex F	
128–129	Reserved for Future Assignment	
130	Time/Date systems	
131–139	Reserved for Future Assignment	
140	Voyage Data Recorder	
141–149	Reserved for Future Assignment	
150	Integrated Instrumentation	

151–159	Reserved for Future Assignment	
160	General Purpose Displays	
161–169	Reserved for Future Assignment	
170	General Sensor Box	
171–179	Reserved for Future Assignment	
180	Weather Instruments	
181–189	Reserved for Future Assignment	
190	Transducer/general	
191–199	Reserved for Future Assignment	
200	NMEA 0183 Converter	
201–254	Reserved for Future Assignment	
255	Not Available	
90	Environmental (HVAC) systems	
0–127	See Annex F	Industry non-specific
128–254	Reserved for Future Assignment	
255	Not Available	
100	Deck, cargo, and fishing equipment systems	
0–127	See Annex F	Industry non-specific
128–254	Reserved for Future Assignment	
255	Not Available	
127	Not Available	
0–127	See Annex F	Industry non-specific
128–254	Reserved for Future Assignment	
255	Not Available	

5 Industrial/process control/stationary			
0	Non-specific systems		
0–127	See Annex F	Industry non-specific	
128	Supplemental Engine Control Sensing		
129	Generator Set Controller	Generator set controller used to collect data and control.	
130–254	Reserved for Future Assignment		
255	Not Available		

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Annex F (normative)

ISO 11783 All industry NAMES

The NAME fields are specified in ISO 11783-5. This annex defines the lower 128 functions that are independent of the industry group and device class. These functions are used within all industry groups — distinguishing them from industry group 0, which is an industry group itself but applicable to all industries.

Value	Function	Description
0	Engine	While the function identifies the typical mechanical power source of the machine, the reference tends to be to the management system that controls the torque vs. speed vs. command (typically throttle) of that power source
1	Auxiliary Power Unit (APU)	Power source for operating systems without the use of the prime "drive" engine
2	Electric Propulsion Control	Control system which operates the drive mechanism when it is electrically powered, such as battery-motor or engine generator-motor hybrids
3	Transmission	Mechanical system for altering the speed vs. torque output of the engine to a level usable by another system on the machine, although the network reference is actually to the system that controls the operation of said transmission
4	Battery Pack Monitor	Monitors the condition — charge, temperature and power remaining for an internal battery pack — typically used with electric propulsion
5	Shift Control	Unit that determines and transmits onto the network the gear, the range, the operating mode, or any or all of these that the operator desires for the transmission (not to be confused with transmission control, i.e. transmission)
6	Power Take-Off Control – Rear or Primary	System that controls the mechanical power derived from a prime engine and used to operate auxiliary items such as compressors in on highway vehicles and such as implements in AG applications — can be the main or rear unit
7	Axle — Steering	Adjusts attack angle as function of steering
8	Axle — Driving	