

INTERNATIONAL STANDARD



**Digital addressable lighting interface –
Part 333: Particular requirements for control devices – Manual configuration
(feature type 33)**

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**Digital addressable lighting interface –
Part 333: Particular requirements for control devices – Manual configuration
(feature type 33)**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DIGITAL ADDRESSABLE LIGHTING INTERFACE –**Part 333: Particular requirements for control devices –
Manual configuration (feature type 33)**

FOREWORD

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International Standard IEC 62386-333 has been prepared by IEC technical committee 34: Lamps and related equipment.

The text of this International Standard is based on the following documents:

CDV	Report on voting
34C/1267/CDV	34C/1350/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62386 series, published under the general title *Digital addressable lighting interface*, can be found on the IEC website.

This Part 333 of IEC 62386 is intended to be used in conjunction with:

- Part 101, which contains general requirements for system components;
- Part 103, which contains general requirements for control devices.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

IEC 62386 contains several parts, referred to as series. The 1xx series includes the basic specifications. Part 101 contains general requirements for system components, Part 102 extends this information with general requirements for control gear and Part 103 extends it further with general requirements for control devices.

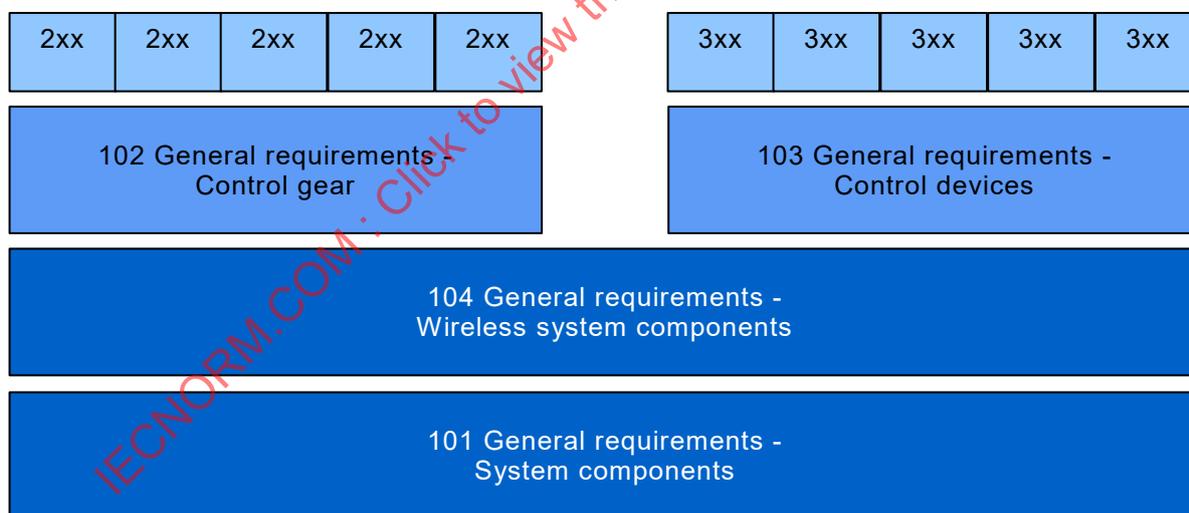
The 2xx parts extend the general requirements for control gear with lamp specific extensions (mainly for backward compatibility with Edition 1 of IEC 62386) and with control gear specific features.

The 3xx parts extend the general requirements for control devices with input device specific extensions describing the instance types as well as some common features that can be combined with multiple instance types.

This first edition of IEC 62386-333 is intended to be used in conjunction with IEC 62386-101:2014, IEC 62386-101:2014/AMD1:—, IEC 62386-103:2014, IEC 62386-103:2014/AMD1:— and the parts for control devices IEC 62386-3XX. The division of IEC 62386 into separately published parts provides for ease of future amendments and revisions. Additional requirements will be added as and when a need for them is recognized.

This document, and the other parts that make up IEC 62386, in referring to any of the clauses of IEC 62386-1XX, specifies the extent to which such a clause is applicable and the order in which the tests are to be performed; the parts also include additional requirements, as necessary.

The setup of the standards is graphically represented in Figure 1 below.



IEC

Figure 1 – IEC 62386 graphical overview

Where the requirements of any of the clauses of IEC 62386-1XX are referred to in this document by the sentence "The requirements of IEC 62386-1XX, Clause "n" apply", this sentence is to be interpreted as meaning that all requirements of the clause in question of part 1XX apply, except any which are clearly inapplicable.

The standardization of the control interface for control devices is intended to achieve compatible co-existence and multi-master operation between electronic control gear and lighting control devices, below the level of building management systems. This document describes a method of implementing manual configuration for control devices.

All numbers used in this document are decimal numbers unless otherwise noted. Hexadecimal numbers are given in the format 0xVV, where VV is the value. Binary numbers are given in the format XXXXXXXXb or in the format XXXX XXXX, where X is 0 or 1; "x" in binary numbers means "don't care".

The following typographic expressions are used:

Variables: "*variableName*" or "*variableName[3:0]*", giving only bits 3 to 0 of "*variableName*".

Range of values: [lowest, highest]

Command: "COMMAND NAME".

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DIGITAL ADDRESSABLE LIGHTING INTERFACE –

Part 333: Particular requirements for control devices – Manual configuration (feature type 33)

1 Scope

This part of IEC 62386 specifies a bus system for control by digital signals of electronic lighting equipment which is in line with the requirements of IEC 61347 (all parts).

This document is applicable to IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:— control devices supporting manual configuration.

NOTE Requirements for testing individual products during production are not included.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 62386-101:2014, *Digital addressable lighting interface – Part 101: General requirements – System components*
IEC 62386-101:2014/AMD1:—¹

IEC 62386-103:2014, *Digital addressable lighting interface – Part 103: General requirements – Control devices*
IEC 62386-103:2014/AMD1:—²

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62386-103 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 manual configuration

configuration of instance variables and/or control device variables and/or feature variables using other means than the bus

EXAMPLE Potentiometer for configuration of the hold time of a movement sensor.

¹ Under preparation. Stage at the time of publication: IEC TPUB 62386-101/AMD1:2018.

² Under preparation. Stage at the time of publication: IEC RFDIS 62386-103/AMD1:2018.

Note 1 to entry: This definition does only cover manual configuration of variables defined within IEC 62386-103 and IEC 62386-3xx. Other manually configurable parameters of a control device are not affected by this document.

4 General

4.1 General

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 4 apply, with the restrictions, changes and additions identified below.

4.2 Version number

In 4.2 of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, "103" shall be replaced by "333", "version number" shall be replaced by "extended version number" and "*versionNumber*" shall be replaced by "*extendedVersionNumber*".

4.3 Insulation

According to IEC 61347-1 it might be required that the control device has at least supplementary insulation. However, this also depends on the connected components (means) for manual configuration. In case internal components are used, the control device shall have at least supplementary insulation. In case of external connected components, it depends on the requirements imposed on these components.

NOTE IEC-62386-103:2014 and IEC 62386-103:2014/AMD1 requires system components to have at least basic insulation. Manual configuration means are intended to be safely operable by end users.

5 Electrical specification

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 5, apply.

6 Interface power supply

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 6, apply.

7 Transmission protocol structure

7.1 General

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 7 apply, with the restrictions, changes and additions identified below.

7.2 Frame format for event messages

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 7.2.2.1 apply, with the following additions and changes (see Table 1).

Table 1 – 24-bit event message frame encoding ‘manual configuration’

Bits														Event source
Event source information													Event info	
23	22	21	20	19	18	17	16	15	14	13	12	11	10	
1	1	1	0	bit number of variable / instance type / feature type / short address. Refer to 9.3.4 for further information.										Manual configuration

8 Timing

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 8 apply.

9 Method of operation

9.1 General

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 9 apply, with the following additions:

9.2 Feature type

The feature type (*featureType*) shall be equal to 33.

9.3 Events

9.3.1 General

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 9.6 apply, with the additions identified below.

A manual configuration event message shall indicate a change of one or more device variable(s) or instance variable(s) triggered by a manual configuration.

NOTE 1 Depending on the variables affected by the change, several separate events can be generated.

NOTE 2 A single event can indicate a simultaneous change of one or more instance/device/feature variables as long as the event source is the same. For example, changing one or more variables within "manualConfigInstance103" will lead to a single event. See 9.3.4.

9.3.2 Priority use

The default *eventPriority* of a manual configuration event shall be priority 5.

NOTE Depending on implemented feature functionality *eventPriority* can be set individually on instance and/or on device level.

9.3.3 Bus usage

9.3.3.1 Instance level

Multiple manual configuration events from a single instance may be sent in a transaction.

9.3.3.2 Device level

Multiple manual configuration events from different instances may be sent in a transaction.

9.3.4 Encoding

The content of a manual configuration event differs according to the affected variables within “*manualConfigDevice*”, “*manualConfigInstance103*”, “*manualConfigInstance3xx*”, “*manualConfigDevFeature3xx*” or “*manualConfigInstFeature3xx*”.

The manual configuration event message shall be encoded as described below (see Table 2).

Table 2 – Event source information ‘manual configuration’

Bits											Event source
19	18	17	16	15	14	13	12	11...07	06	05...00	
0	0	0	0	1	c		“instanceType”	“00000b”	1 ^a	(current) “shortAddress” ^a	“manualConfigInstance103”
1	0	1	c	0	1 ^b	(previous) “shortAddress” ^b					“manualConfigInstance3xx”
		0					“manualConfigDevice” (except change of “shortAddress”)				
1	0	1	c	0	1 ^b	(previous) “shortAddress” ^b	“featureType”	1 ^a	(current) “shortAddress” ^a	“manualConfigDevice” (change of “shortAddress”)	
1	1	0								“manualConfigInstFeature3xx”	
1	1	1	c	0	1 ^b	(previous) “shortAddress” ^b	“featureType”	1 ^a	(current) “shortAddress” ^a	“manualConfigDevFeature3xx”	
1	1	1								“manualConfigInstFeature3xx”	

^a In case current “shortAddress” equals MASK, bits [6:0] shall be 0000000b.

^b Bits [12:7] shall contain the value of “shortAddress” before the change has been applied. In case previous short address has been MASK, bits [13:7] shall be 0000000b.

^c “bit numbering of variable” within the same event source: shall indicate the lowest significant bit of the instance, feature or device variable(s) that have been affected by manual configuration. With this, only a single event is generated in case of a simultaneous change of several variables within the same event source.

Supplementary descriptions of Table 2 are as follows.

Bit 19 shall be set if the manual configuration event was provoked by manual configuration of a control device feature. It shall be cleared if the manual configuration event was provoked by manual configuration of a control device instance.

Bit 18 shall indicate if the manual configuration has been performed on device or on instance level.

Bits [16:15] have a fixed value of 01b. Refer to IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 7.2.2 for additional information.

Remaining bit combinations of manual configuration event are reserved and shall not be used.

EXAMPLE For manual configuration event message, manual configuration of “*instanceActive*” within “*manualConfigInstance103*” in a push button control device (instance type 1) with short address 5 will lead to the following event: 0000 1011 0000 1100 0101b.

9.3.5 Event generation

A “manual configuration event” message shall be transmitted, if all of the following conditions hold:

- change in value of a supported manually configurable variable by using other means than the bus, and
- manual configuration for the changed variable is enabled.

Additionally to the above requirements, one or more “manual configuration event” message(s) shall be transmitted, if one or more bits of “*manualConfigDevice*”, “*manualConfigInstance103*”, “*manualConfigInstance3xx*”, “*manualConfigDevFeature3xx*” and “*manualConfigInstFeature3xx*” are changed from NO to YES, while the value of the affected variable(s) changes as a result of this. This applies only to supported variables given by “*manualCapabilityDevice*”, “*manualCapabilityInstance103*”, “*manualCapabilityInstance3xx*”, “*manualCapabilityDevFeature3xx*” and “*manualCapabilityInstFeature3xx*”. See also 9.4.3.

9.3.6 Power interruption

The requirements of 9.3.5 shall apply for manual configuration(s) performed during normal operation. In case of a manual configuration performed during an interruption of external power supply and/or interruption of bus power supply, the control device shall generate appropriate manual configuration event messages after completion of the power up procedure and/or the system failure condition is resolved.

NOTE See IEC 62386-101:2014 and IEC 62386-103:2014/AMD1:—, 4.11 for more detailed information on power interruptions.

9.3.7 Manual configuration affecting multiple variables

If manual configuration affects more than one variable, a separate event shall be generated for every variable that has been changed.

NOTE Changing multiple instance/device variables simultaneously can cause high bus traffic.

EXAMPLE Manually triggered simultaneous change of “*instanceGroup0*”, “*instanceGroup1*” and “*instanceGroup2*” will lead to three separate manual configuration events.

9.4 Configuring the feature

9.4.1 General

Manual configuration is possible on device level, on instance level and/or feature level.

9.4.2 Manual capability

9.4.2.1 General

The supported type of manual configuration shall be given by “*manualCapabilityDevice*”, “*manualCapabilityInstance103*”, “*manualCapabilityInstance3xx*”, “*manualCapabilityDevFeature3xx*” and “*manualCapabilityInstFeature3xx*”.

9.4.2.2 Manual capability on device level

The encoding of “*manualCapabilityDevice*” shall be as shown in Table 3. The value can be queried using “QUERY MANUAL CONFIGURATION CAPABILITY 103” with device feature addressing (instance byte = 0xFC).

Table 3 – “manualCapabilityDevice” encoding

Bit	Description	Value
0	Manual configuration of “shortAddress” supported ^a	1 = “Yes”
1	Manual configuration of “deviceGroup” supported ^a	1 = “Yes”
2	Manual configuration of “operatingMode” supported ^a	1 = “Yes”
3	Manual configuration of “applicationActive” supported ^a	1 = “Yes”
4	Manual configuration of “powerCycleNotification” supported ^a	1 = “Yes”
5	Reserved	0 = “No” (default value)
6	Reserved	0 = “No” (default value)
7	Reserved	0 = “No” (default value)

^a See IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 10.

9.4.2.3 Manual capability on instance level

The encoding of “manualCapabilityInstance103” shall be as shown in Table 4. The value can be queried using “QUERY MANUAL CONFIGURATION CAPABILITY 103” with instance feature addressing.

Table 4 – “manualCapabilityInstance103” encoding

Bit	Description	Value
0	Manual configuration of “instanceGroup0” supported ^a	1 = “Yes”
1	Manual configuration of “instanceGroup1” supported ^a	1 = “Yes”
2	Manual configuration of “instanceGroup2” supported ^a	1 = “Yes”
3	Manual configuration of “instanceActive” supported ^a	1 = “Yes”
4	Manual configuration of “eventPriority” supported ^a	1 = “Yes”
5	Manual configuration of “eventFilter” supported ^a	1 = “Yes”
6	Manual configuration of “eventScheme” supported ^a	1 = “Yes”
7	Reserved	0 = “No” (default value)

^a See IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 10.

The encoding of “manualCapabilityInstance3xx” shall be as defined in IEC 62386-3XX. The value can be queried using “QUERY MANUAL CONFIGURATION CAPABILITY 3xx” with instance feature addressing. Encoding shall be in such a way that supporting manual configuration of a variable is indicated through the respective bit of “manualCapabilityInstance3xx” set to YES.

9.4.2.4 Manual capability of features

The encoding of “manualCapabilityDevFeature3xx” and “manualCapabilityInstFeature3xx” shall be as defined in IEC 62386-3XX. The value can be queried using “QUERY MANUAL CONFIGURATION CAPABILITY FEATURE 3xx”. This can be done with instance feature addressing or device feature addressing (instance byte = 0xFC), as a feature can be linked to a single instance or the whole device. Encoding shall be in such a way that supporting manual configuration of a variable is indicated through the respective bit of “manualCapabilityDevFeature3xx” and “manualCapabilityInstFeature3xx” set to YES.

NOTE Contents of variables “*manualCapabilityDevFeature3xx*” and “*manualCapabilityInstFeature3xx*” are identical.

9.4.3 Enable/disable manual configuration

9.4.3.1 Enabling/disabling on device level

If a type of manual configuration is supported on device level, it can be enabled and disabled using “*manualConfigDevice*”. Manual configuration shall be enabled by default.

The “*manualConfigDevice*” shall have the definition as given in Table 5.

Table 5 – “*manualConfigDevice*” encoding

Bit	Description	Value	Default
0	Manual configuration of “ <i>shortAddress</i> ” is enabled ^a	1 = “Yes”	Bit 0 of “ <i>manualCapabilityDevice</i> ”
1	Manual configuration of “ <i>deviceGroup</i> ” is enabled ^a	1 = “Yes”	Bit 1 of “ <i>manualCapabilityDevice</i> ”
2	Manual configuration of “ <i>operatingMode</i> ” is enabled ^a	1 = “Yes”	Bit 2 of “ <i>manualCapabilityDevice</i> ”
3	Manual configuration of “ <i>applicationActive</i> ” is enabled ^a	1 = “Yes”	Bit 3 of “ <i>manualCapabilityDevice</i> ”
4	Manual configuration of “ <i>powerCycleNotification</i> ” is enabled ^a	1 = “Yes”	Bit 4 of “ <i>manualCapabilityDevice</i> ”
5	Reserved	0 = “No”	0
6	Reserved	0 = “No”	0
7	Reserved	0 = “No”	0

^a See IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:— Clause 10.

The “*manualConfigDevice*” can be set via the feature command “SET MANUAL CONFIGURATION 103 (*DTR0*)” and can be queried using the feature command “QUERY MANUAL CONFIGURATION 103”. Device feature addressing (instance byte = 0xFC) is mandatory for this purpose.

“SET MANUAL CONFIGURATION 103 (*DTR0*)” shall set “*manualConfigDevice*” by performing a logical AND operation between “*DTR0*” and “*manualCapabilityDevice*”.

NOTE This implies that an application controller can manipulate its own “*manualConfigDevice*” variable via “SET MANUAL CONFIGURATION 103 (*DTR0*)” sent to its own short address.

9.4.3.2 Enabling/disabling on instance level

If a type of manual configuration is supported on instance level, it can be enabled and disabled using “*manualConfigInstance103*” and “*manualConfigInstance3xx*”. Manual configuration shall be enabled by default.

The “*manualConfigInstance103*” shall have the definition as given in Table 6.

Table 6 – “manualConfigInstance103” encoding

Bit	Description	Value	Default
0	Manual configuration of “instanceGroup0” is enabled ^a	1 = “Yes”	Bit 0 of “manualCapabilityInstance103”
1	Manual configuration of “instanceGroup1” is enabled ^a	1 = “Yes”	Bit 1 of “manualCapabilityInstance103”
2	Manual configuration of “instanceGroup2” is enabled ^a	1 = “Yes”	Bit 2 of “manualCapabilityInstance103”
3	Manual configuration of “instanceActive” is enabled ^a	1 = “Yes”	Bit 3 of “manualCapabilityInstance103”
4	Manual configuration of “eventPriority” is enabled ^a	1 = “Yes”	Bit 4 of “manualCapabilityInstance103”
5	Manual configuration of “eventFilter” is enabled ^a	1 = “Yes”	Bit 5 of “manualCapabilityInstance103”
6	Manual configuration of “eventScheme” is enabled ^a	1 = “Yes”	Bit 6 of “manualCapabilityInstance103”
7	Reserved	0 = “No”	0

^a See IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 10.

The encoding of “manualConfigInstance3xx” is according to the encoding of “manualCapabilityInstance3xx” as defined in IEC 62386-3XX. It shall be in such a way that enabling manual configuration of a variable is achieved by setting the respective bit of “manualConfigInstance3xx” to YES.

The “manualConfigInstance103” can be set via the feature command “SET MANUAL CONFIGURATION 103 (DTR0)” and can be queried using the feature command “QUERY MANUAL CONFIGURATION 103”. Instance feature addressing is mandatory for this purpose.

“SET MANUAL CONFIGURATION 103 (DTR0)” shall set “manualConfigInstance103” by performing a logical AND operation between “DTR0” and “manualCapabilityInstance103”.

The “manualConfigInstance3xx” can be set via the feature command “SET MANUAL CONFIGURATION 3xx (DTR0)” and can be queried using the feature command “QUERY MANUAL CONFIGURATION 3xx”. Instance feature addressing is mandatory for this purpose.

“SET MANUAL CONFIGURATION 3xx (DTR0)” shall set “manualConfigInstance3xx” by performing a logical AND operation between “DTR0” and “manualCapabilityInstance3xx”.

NOTE Disabling of any 3xx instance on a control device can be achieved by using “SET MANUAL CONFIGURATION 3xx (DTR0)” with instance broadcast addressing (instance byte: 0xFF) and “DTR0”=0x00.

9.4.3.3 Enabling/disabling manual configuration of features

If a type of manual configuration of features is supported it can be enabled and disabled using “manualConfigDevFeature3xx” or “manualConfigInstFeature3xx”. Manual configuration shall be enabled by default.

The encoding of “manualConfigDevFeature3xx” and “manualConfigInstFeature3xx” is according to the encoding of “manualCapabilityDevFeature3xx” and “manualCapabilityInstFeature3xx” as defined in IEC 62386-3XX. It shall be in such a way that enabling manual configuration of a variable is achieved by setting the respective bit of “manualConfigDevFeature3xx” and/or “manualConfigInstFeature3xx” to YES.

The “manualConfigDevFeature3xx” and “manualConfigInstFeature3xx” can be set via the feature command “SET MANUAL CONFIGURATION FEATURE 3xx (DTR0)” and can be queried using the feature command “QUERY MANUAL CONFIGURATION FEATURE 3xx”. Addressing a feature linked to a single instance is achieved with instance feature addressing. Addressing a feature linked to the whole device is achieved with device feature addressing (instance byte = 0xFC).

“SET MANUAL CONFIGURATION FEATURE 3xx (DTR0)” shall set “*manualConfigDevFeature3xx*” or “*manualConfigInstFeature3xx*” by performing a logical AND operation between “DTR0” and “*manualCapabilityDevFeature3xx*” or “*manualCapabilityInstFeature3xx*” respectively.

NOTE This implies that an application controller can manipulate its own “*manualConfigDevFeature3xx*” variable via “SET MANUAL CONFIGURATION FEATURE 3xx (DTR0)” sent to its own short address.

9.4.3.4 Behaviour of affected variables when enabling/disabling manual configuration

If one or more bits of “*manualConfigDevice*”, “*manualConfigInstance103*”, “*manualConfigInstance3xx*”, “*manualConfigDevFeature3xx*” and “*manualConfigInstFeature3xx*” are changed from

- NO to YES: the corresponding device variable(s) and/or instance variable(s) and/or feature variable(s) shall be updated within 1 s. The new value shall be derived from the current setting of the manual configuration means of the corresponding variable. If a change in value is caused by this, a notification event according to 9.3 shall be generated.
- YES to NO: the current value of the corresponding device variable(s) and/or instance variable(s) and/or feature variable(s) shall not be changed. Exception from that is “*shortAddress*”. See 9.4.5.2 for detailed information. In either case no notification event shall be generated.

It is recommended that an application controller sends a RESET instruction to affected control devices after disabling manual configuration.

9.4.4 Querying any manual configuration enabled

Manual configuration can have a huge impact on system behaviour. To ensure consistent system behaviour, an application controller might need the information if there are any control devices connected to the bus with any manual configuration enabled.

For this purpose “QUERY ANY MANUAL CONFIGURATION ENABLED” shall be used.

9.4.5 Manual configuration behaviour

9.4.5.1 General

When a manual configuration bit is set to

- NO: any change at the manual configuration means shall have no effect on the corresponding device, instance and/or feature variable value. These values shall only be changed by execution of the corresponding configuration command.
- YES: the corresponding configuration command shall be discarded and therefore have no effect on device, instance and/or feature variable values. These values shall only be changed by corresponding manual configuration means.

The corresponding query command of a device, instance and/or feature variable shall always answer its actual value, independent of whether the value has been changed by a configuration command or via manual configuration.

Any manual configuration means shall change the value of a device variable and/or instance variable or feature variable in a way that it fits into the range of validity of the corresponding device, instance and/or feature variable.

The achievable range of a variable when configured via manual configuration may be restricted compared to its defined range of validity.

If a manual configuration bit is set to YES, any change at the manual configuration means shall update the corresponding device variable and/or instance variable or feature variable within 1 s after the manual adjustment has been carried out.

9.4.5.2 Manual configuration for short address

Manual configuration of the short address needs some special attention. It should be used carefully in order to avoid double addresses for example in case of system extensions.

Therefore, the following additional requirements apply to manual configuration of the short address.

On reception of “SET MANUAL CONFIGURATION 103 (*DTR0*)” using device feature addressing with bit 0 of *DTR0* cleared leading to a change of the value of bit 0 in “*manualConfigDevice*” (disable manual configuration of the short address), the short address shall be set to MASK.

10 Declaration of variables

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, Clause 10, apply with the following considerations.

Table 7 shows additions and restrictions to the device variables.

Table 7 – Declaration of additions and restrictions to existing device variables

Variable	Default value (factory)	Reset value	Power on value	Range of validity	Memory type
“ <i>featureType</i> ” ^a	33	no change	no change	33	ROM
“ <i>eventPriority</i> ” ^a	5	no change	no change	[2,5]	NVM
“ <i>manualCapabilityDevice</i> ”	factory burn-in	no change	no change	[0, 31]	ROM
“ <i>manualCapabilityDevFeature3xx</i> ”	factory burn-in ^b	no change	no change	^b	ROM
“ <i>manualConfigDevice</i> ”	“ <i>manualCapabilityDevice</i> ”	no change	no change	[0, 31] ^c	NVM
“ <i>manualConfigDevFeature3xx</i> ”	“ <i>manualCapabilityDevFeature3xx</i> ”	no change	no change	^{b d}	NVM
“ <i>extendedVersionNumber</i> ”	2.0	no change	no change	00001000b	ROM

^a Application depending on whether variable refers to device and/or instance level.

^b The capabilities of the feature type are defined in the respective part of IEC 62386-3XX.

^c Only the bits that are set in “*manualCapabilityDevice*” can be set.

^d Only the bits that are set in “*manualCapabilityDevFeature3xx*” can be set.

Table 8 shows additions and restrictions to the instance variables.

Table 8 – Declaration of additions and restrictions to existing instance variables

Variable	Default value (factory)	Reset value	Power on value	Range of validity	Memory type
" <i>featureType</i> " ^a	33	no change	no change	33	ROM
" <i>eventPriority</i> " ^a	5	no change	no change	[2,5]	NVM
" <i>manualCapabilityInstance103</i> "	factory burn-in	no change	no change	[0, 127]	ROM
" <i>manualCapabilityInstance3xx</i> "	factory burn-in ^b	no change	no change	^b	ROM
" <i>manualCapabilityInstFeature3xx</i> "	factory burn-in ^c	no change	no change	^c	ROM
" <i>manualConfigInstance103</i> "	" <i>manualCapabilityInstance103</i> "	no change	no change	[0, 127] ^d	NVM
" <i>manualConfigInstance3xx</i> "	" <i>manualCapabilityInstance3xx</i> "	no change	no change	^{b e}	NVM
" <i>manualConfigInstFeature3xx</i> "	" <i>manualCapabilityInstFeature3xx</i> "	no change	no change	^{c f}	NVM

^a Application depending on whether the feature is on device and/or instance level.
^b The capabilities of the instance type are defined in the respective part of IEC 62386-3XX.
^c The capabilities of the feature type are defined in the respective part of IEC 62386-3XX.
^d Only the bits that are set in "*manualCapabilityInstance103*" can be set.
^e Only the bits that are set in "*manualCapabilityInstance3xx*" can be set.
^f Only the bits that are set in "*manualCapabilityInstFeature3xx*" can be set.

11 Definition of commands

11.1 General

Unused opcodes shall be reserved for future needs.

11.2 Overview sheets

11.2.1 General

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.2 apply, with the following additions.

11.2.2 Standard commands

Table 9 gives an overview of the additional feature commands for manual configuration.

Table 9 – Additional feature commands

Command name	Address byte	Instance byte		Opcode byte	DTR0	DTR1	DTR2	Answer	Send twice	See subclause	Command subclause
		Device feature ^a	Instance feature ^b								
SET MANUAL CONFIGURATION 103 (DTR0)	Device	✓	✓	0x00	✓				✓	9.4.3.1 9.4.3.2	11.11.2
SET MANUAL CONFIGURATION 3xx (DTR0)	Device		✓	0x01	✓				✓	9.4.3.2	11.11.3
SET MANUAL CONFIGURATION FEATURE 3xx (DTR0)	Device	✓	✓	0x02	✓				✓	9.4.3.3	11.11.4
QUERY MANUAL CONFIGURATION CAPABILITY FEATURE 3xx	Device	✓	✓	0x09				✓		9.4.2.4	11.12.4
QUERY MANUAL CONFIGURATION FEATURE 3xx	Device	✓	✓	0x0A				✓		9.4.3.3	11.12.7
QUERY ANY MANUAL CONFIGURATION ENABLED	Device	✓ ^c	✓	0x0B				✓		9.4.4	11.12.8
QUERY MANUAL CONFIGURATION CAPABILITY 103	Device	✓	✓	0x0C				✓		9.4.2.2 9.4.2.3	11.12.2
QUERY MANUAL CONFIGURATION CAPABILITY 3xx	Device		✓	0x0D				✓		9.4.2.3	11.12.3
QUERY MANUAL CONFIGURATION 103	Device	✓	✓	0x0E				✓		9.4.3.1 9.4.3.2	11.12.5
QUERY MANUAL CONFIGURATION 3xx	Device		✓	0x0F				✓		9.4.3.2	11.12.6

^a For device feature addressing, instance byte is 0xFC.

^b Instance feature addressing comprises the following instance byte ranges [0x20:0x3F],[0xA0:0xBF], [0x60:0x7F] and 0xFD.

^c Only applicable for instance byte being 0xFC (device feature addressing) or 0xFD (instance feature addressing).

11.3 Event messages

11.3.1 General

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.3 apply with the following additions.

11.3.2 Manual configuration event

This event notifies the occurrence of a manual configuration at a control device. It shall be generated following the requirements in 9.3.5.

11.4 Device control instructions

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.4 apply.

11.5 Device configuration instructions

11.5.1 General

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.5 apply with the following restrictions and changes.

11.5.2 RESET

Device, instance and/or feature variables with manual configuration enabled according to “*manualConfigDevice*”, “*manualConfigDevFeature3xx*”, “*manualConfigInstance103*”, “*manualConfigInstance3xx*” and “*manualConfigInstFeature3xx*” shall not change their values on execution of “RESET”.

NOTE Partly enabled manual configuration can lead to unpredictable control device behaviour as not all variables are set to their reset values.

11.6 Device queries

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.6 apply.

11.7 Instance control instructions

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.7 apply.

11.8 Instance configuration instructions

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.8 apply.

11.9 Instance queries

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.9 apply.

11.10 Special commands

The requirements of IEC 62386-103:2014 and IEC 62386-103:2014/AMD1:—, 11.10 apply.

11.11 Feature configuration instructions

11.11.1 General

Feature configuration commands are used to change the configuration and/or the mode of operation of the control device or instance. For this reason a feature configuration instruction