Release Notes DSMR4.2.3

Dutch Smart Meter Requirements

Date:	**February 13th, 2019**
Version:	**4.2.3**
Status:	**Final**

Change summary

Version	Change
4.2	Initial version of the release notes for the DSMR 4.2
4.2.1	Update for publication
4.2.2	Removal of breaker and valve
4.2.3	Correct error in Commlog requirements. Added additional Power Quality Log – Photo Voltage (Kaifa Only) Added Partial Power Outage functionality Added P1 detection functionality Added Select Access by Range Changed definition for Power Down and Power Up events

CONTENTS

1 INTRODUCTION

This document describes the changes incorporated in the Dutch Smart Meter Requirements version v4.2.3 compared to the previous version of the DSMR v4.2.2 The intention of this document is to make the changes in the various DSMR documents more transparent for the readers.

1.1 Normative references

The following standards are referred to in document. For undated references the latest edition applies.

Ref No	Document	Description
1.	NTA 8130 NL:2007	Netherlands Technical Agreement -“Minimum set of functions for metering of electricity, gas and thermal energy for domestic customers”
2.	Dutch Smart Meter Requirements v4.2.3 final Main	The main document of the Dutch Smart Meter Requirements, containing all definitions and most of the use cases and requirements
3.	Dutch Smart Meter Requirements v4.2.2 final P1	Companion standard P1
4.	Dutch Smart Meter Requirements v4.2.2 final P2	Companion standard P2
5.	Dutch Smart Meter Requirements v4.2.3 final P3	Companion standard P3
6.	Dutch Smart Meter Requirements v4.2.2 final GPRS	Additional document describing the requirements for the GPRS infrastructure as part of the Dutch Smart Meter Specification.

2 DSMR V4.2.3 MAIN CHANGES

This section lists all the changes incorporated in the Dutch Smart Meter Requirements v4.2.3 Final Main document. Minor editorial corrections are not listed.

1. Changed duplicate requirement 4.3.90 for second occurrence to 4.3.94:

Description	During power-up of the meter the Legally Relevant Firmware version should be visible						
Rationale	The MID requires that the Legally Relevant Firmware version must be easily retrieved from the metering device. Next to showing this Firmware version in the Service mode of the meter (DSMR-M 4.3.55) it must also be visible during power up of the meter. The duration for which this is shown must be long enough to easily read the Legally Relevant Firmware version number.						
Fit criterion	During power up of the E meter the Legally Relevant Firmware version (Active Firmware Identifier) must be shown for 5 seconds.						
History	Sep. 2013	**Origin**	WG DSMR	**Port**	n.a.	**Applicable**	E meter

2. In section 5.3.1 added a new requirement

DSMR-M 4.5.18a

Description	Detection of connection of equipment on the P1 port						
Rationale	GO wants to have insight in the use of P1 devices/P1 service by the customer						
Fit criterion	The E-meter shall detect and register the connection of auxiliary equipment to the P1 port. The GO shall be able to determine (via P3) the status of the P1 port being either: • P1 auxiliary equipment connected • P1 auxiliary equipment not connected Detection of a connected P1 device shall be done by monitoring the request line of the P1 interface						
History	Dec. 2018	**Origin**	SMR5.0	**Port**	P1	**Applicable**	E meter

3. Improved table 5-18d in section 5.15 by placing former footnotes in a new column:

Comlog code	**Meaning**	**Number of meter readings in display**	**Purpose**	**Explanation**
1	Technical maintenance of the meter	None	time synchronisation, setting of tariff, special days table, status of meter (alarms and events) firmware upgrade.	
2	Technical mainte-	None	Power quality, defin-	

	nance of the grid		able load profile, instantaneous and active values.	
3	Meter readings E	Yes	Actual, daily and monthly meter readings	1 meter reading is defined as one set of data for consumption and delivery on all active tariffs at one timestamp[3]
4	Meter readings G	Yes	Actual (last hourly value), daily and monthly meter readings	1 meter reading is defined as one set of data for all connected[4] M-Bus devices at one timestamp[3]
5	Interval data E	Yes	Interval data E meter	1 meter reading is defined as one set of data for consumption and delivery at one timestamp[3]
6	Interval data G	Yes	Interval data all M-bus devices	1 meter reading is defined as one set of data for all connected[4] M-Bus devices at one timestamp[3]

4. Added new footnote to explain timestamp for actual, daily and monthly meter reading:
   The timestamp for daily and monthly meter readings is defined as the date and time stored in the profile. The timestamp for actual reading (last hourly value for G) is defined as the time of the reading of the registers. All actual readings are considered to have the same timestamp and will always be different from the timestamp in the daily and monthly profiles. If daily and monthly meter readings are read in combination with the actual readings, the comlog counter must be incremented twice.

5. Added new footnote to explain timestamp for interval data:
   Timestamp is defined as the date and time of the measurement values

6. Added new footnote to explain connected:

Connected means that the M-Bus device is installed and not-connected means that the M-Bus device is de-installed or has never been installed

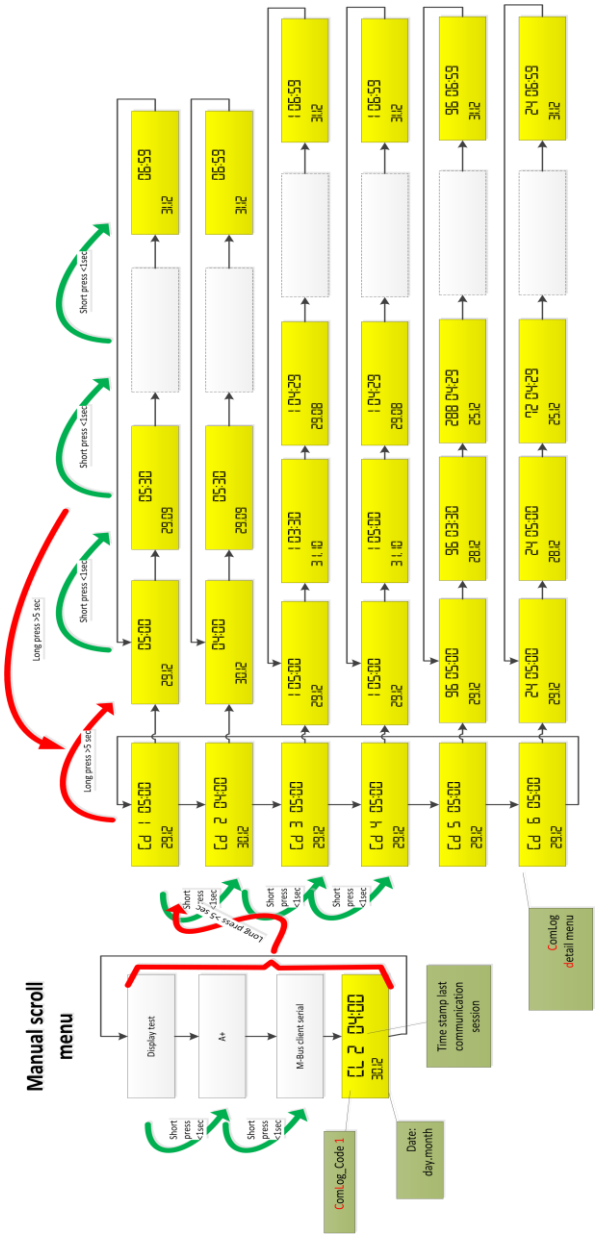
7. Update requirement DSMR-M 4.3.94:

Description	The communication session information shall be available per comlog code in a standardized way.						
Rationale	The customer has to be able to check in an easy way when the GO has communicated with the E- and M-bus device and for which reason and how many data has been retrieved.						

Fit criterion	The information must be displayed according to the navigation structure from figure 5-15.1:
	• In manual scroll the date and timestamp of the ~~last~~most recent communication session with the corresponding com log code is displayed,
	• Detailed com log information can be obtained by pressing the button for >5 seconds,
	• The first level of the com log menu shows the six com log types (when applicable) with corresponding date and timestamp of the ~~last~~most recent communication session,
	• The second level of the com log menu can be entered by pressing the button for >5 seconds,
	• The second level of the com log menu shows:
	  ○ The date and timestamps of all communication sessions of this com log type,
	  ○ The first entry shall be the most recent communication session and therefore this entry has the same timestamp as depicted in the first level
	  ○ The number of meter readings retrieved by the CS (only applicable for com log codes 3 thru 6).
	• From the second level, the first level can be entered again via a button press of >5 seconds,
	• With a short button press <1 sec the next item within the menu will be selected,
	• Returning to auto scroll will occur after a timeout of 30 seconds (no button press),
	• The next item will be shown after releasing the button.						

History	Sep. 2013	**Origin**	AmvB	**Port**	n.a.	**Applicable**	E meter

8. Corrected an error in figure 5-15.1 (second level of details menu):



9. Added a new use case for Partial Power Outage:

5.16 Use case 16: Provide partial power outage information

This chapter describes the Use Case for detecting and sending Partial power outage information on a poly phase meter to the central system. The trigger description, block diagram and UML sequence diagram are depicted in Figure 5-16.

Trigger	Description
Power outage on one or two phases	On detecting a partial power outage on one or two out of three phases on a poly phase meter, the E meters starts registering this outages and if configured the event(s) will be pushed to the CS.

Figure 5-16a: Provide partial power outage information – trigger description

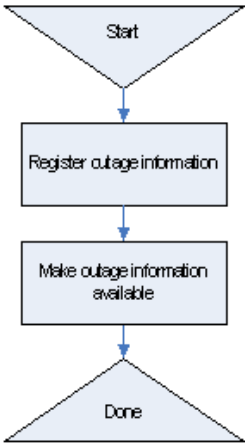


Figure 5-16b: Provide partial power outage information – block diagram

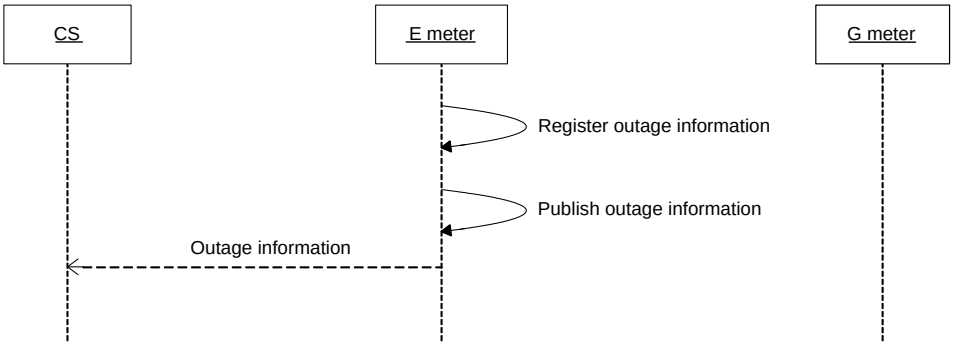


Figure 5-16c: Provide partial power outage information – UML sequence diagram

Pre-conditions

- The meter has detected a partial power outage;
- The meter has logged partial power outages;

Parameters

- Equipment Identifier for the E meter.

Post-conditions

- The GO has information on a partial power outage available from the designated meter.

Assumptions

- None

DSMR-M 4.5.95

Description	The poly phase E-Meter shall be able to detect partial power failure for outage signaling.						
Rationale	In about 90% of power outages in the field only one or two phases are disconnected. When all poly phase meters send power outage information the GO immediately gets a complete picture of the scale of power outage and can respond efficiently.						
Fit criterion	If for a poly phase E-Meter the voltage of one or two phases reaches a low value (same as used for the power outage mentioned in DSMR-M 4.5.39 DSMR-M 4.5.40) for a period longer than 3 sec, then a Partial Power Outage message is sent by the E Meter, if that function is configured and enabled in the E Meter. Time of detection is 3 sec. All parameters are the same for all phases. The message contains the situation at the detection moment.						
History	Dec. 2018	**Origin**	SMR5.0	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.96

Description	The Partial Power Outage message shall contain identification of the phases that suffered power outage.						
Rationale	Partial Power Outage can occur on any of the 3 phases so information about the affected phase is needed						
Fit criterion	Identification of the disconnected phase is send.						
History	Dec. 2018	**Origin**	SMR5.0	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.97

Description	The poly-phase E Meter shall be able to handle a new Partial Power Outage message immediately after completion (sending) the previous Partial Power Outage message.						
Rationale	A second phase could suffer a power outage soon after the previous one.						
Fit criterion	Completion of the Partial Power Outage messages includes handling on all protocol layers						
History	Dec. 2018	**Origin**	SMR5.0	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.98

Description	The Meter shall have the ability to test the Partial Power Outage function without the need for an interrupted main supply.						
Rationale	Testing of Partial Power Outage function in the field.						
Fit criterion	The Meter shall have a precisely timed event that triggers the activation of the Partial Power Outage message. With a programmable time-based event, an emulation of a massive outage is possible.						
History	Dec. 2018	**Origin**	SMR5.0	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.99

Description	It shall be possible to disable and enable the Partial Power Outage Signaling function.						
Rationale	There are situations where it may be useful to prevent unwanted Partial Power Outage messages (e.g. in case of signaling load issues).						
Fit criterion							
History	Dec. 2018	**Origin**	SMR5.0	**Port**	P3	**Applicable**	E meter

10. Updated requirement DSMR-M 4.6.9:

Description	The metering equipment shall deploy the new version immediately.						
Rationale	The metering equipment shall deploy the new version immediately.						
Fit criterion	The new version of the firmware is the operational version of the firmware in the equipment. ~~If the deployment date coincides with a power outage, the upgrade shall be deployed after power on. In this case no error shall be raised.~~						
History	Nov. 2007	**Origin**	I&M	**Port**	n.a.	**Applicable**	E meter

3 DSMR V4.2.3 P3 CHANGES

This section lists all the changes incorporated in the Dutch Smart Meter Requirements v4.2.3 Final P3 document. Minor editorial corrections are not listed.

1. In section 2.1.3 added a footnote for Selective access:
   See section 4.1.1. for details on Selective access

2. Added section 4.1.1, 4.1.1.1 and 4.1.1.2:

   4.1.1 Selective access for Profiles Generic objects

   4.1.1.1 Selective access by range

   Selective access by range is supported for both profiles and event logs, with the following restrictions:

   - The restricting object of range descriptor is limited to attribute 2 of the clock object, e.g. from value and to value contain octet-string with the date-time.
   - Attribute index 0 selection (read all public attributes) of the restricting-object is not supported.
   - The selected values can be an empty array or can specify 1 or more columns.

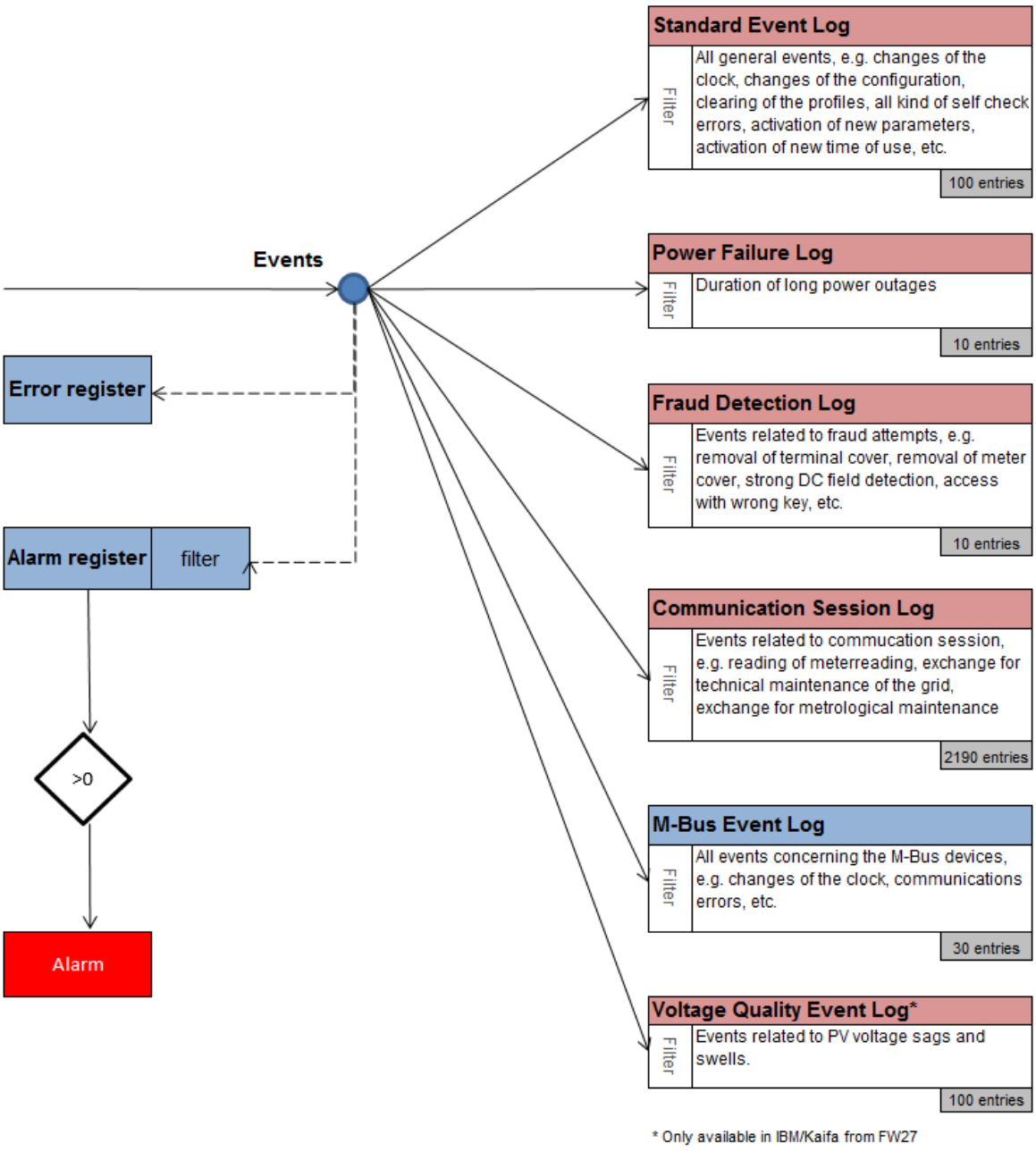
   4.1.1.2 Selective access by entry

Selective access by entry is supported only for event logs, with the following restrictions:

- from selected value of the entry descriptor will always be 1.
- to selected value of the entry descriptor will always be 0.

This means that all rows in use in the event logs will be returned

3. Update the figure in section 4.2:



4. In section 4.2.1 Update the table with event codes, changed definition for Power Down and Power Up events and added events for Partial Power Outage:

Number	Name	Description	Standard Event log	Fraud Detection Log	Communication Session Log	M-Bus Event Log	Voltage Quality Event Log
255	Event log cleared	Indicates that the event log was cleared. This is always the first entry in an event log. It is only stored in the affected event log.	X	X	X	X	X
1	Power Down	Indicates that the meter is not powered anymore, because of which all of its functionality is stopped. In practice this means that all phases are down for a 3 phase meter. Please note that this is related to the functionality of the meter and not directly related to the electricity grid.	X				
2	Power Up	Indicates that the meter is powered again after a power down, and that it is functioning again. In practice this means that at least one phase is up again. This event is not set when new firmware is activated or when the meter is reset to factory settings.	X				
3	Daylight saving time enabled or disabled	Indicates the regular change from and to daylight saving time. The time stamp shows the time before the change. This event is not set in case of manual clock changes and in case of power failures.	X				
4	Clock adjusted (old date/time)	Indicates that the clock has been adjusted. The date/time that is stored in the event log is the old date/time before adjusting the clock.	X				
5	Clock adjusted (new date/time)	Indicates that the clock has been adjusted. The date/time that is stored in the event log is the new date/time after adjusting the clock.	X				
6	Clock invalid	Indicates that clock may be invalid, i.e. if the power reserve of the clock has exhausted. It is set at power up.	X				
7	Replace Battery	Indicates that the battery must be exchanged due to the expected end of life time.	X				
8	Battery voltage low	Indicates that the current battery voltage is low.	X				
9	tariff shift times (TOU) activated	Indicates that the passive tariff shift times (TOU) has been activated.	X				
10	Error register cleared	Indicates that the error register was cleared.	X				
11	Alarm register cleared	Indicates that the alarm register was cleared.	X				
12	Program memory error	Indicates a physical or a logical error in the program memory.	X				
13	RAM error	Indicates a physical or a logical error in the RAM	X				
14	NV memory error	Indicates a physical or a logical error in the non volatile memory	X				
15	Watchdog error	Indicates a watch dog reset or a hardware reset of the microcontroller.	X				
16	Measurement system error	Indicates a logical or physical error in the measurement system	X				

Number	Name	Description	Standard Event log	Fraud Detection Log	Communication Session Log	M-Bus Event Log	Voltage Quality Event Log
17	Firmware ready for activation	Indicates that the new firmware has been successfully downloaded and verified, i.e. it is ready for activation	X				
18	Firmware activated	Indicates that a new firmware has been activated	X				
19	Tariff Shift Time (TOU)	Change of tariff shift times has occurred	X				
20	Succesfull selfcheck after Firmwareupdate	Indicates that the first selfcheck after a firmwareupdate was performed succesfully.	X				
21-39	reserved for future use						
40	Terminal cover removed	Indicates that the terminal cover has been removed		X			
41	Terminal cover closed	Indicates that the terminal cover has been closed		X			
42	Strong DC field detected	Indicates that a strong magnetic DC field has been detected.		X			
43	No strong DC field anymore	Indicates that the strong magnetic DC field has disappeared.		X			
44	Meter cover removed	Indicates that the meter cover has been removed.		X			
45	Meter cover closed	Indicates that the meter cover has been closed.		X			
46	Failed login attempt	Indicates that a user tried to gain access with wrong authentication credentials (intrusion detection)		X			
47	Configuration change	Indicates that configuration is activated or de-activated after the meter was installed.		X			
48-59	reserved for future use						
60	Reserved for backwards compatibility						
61	Reserved for backwards compatibility						
62	Reserved for backwards compatibility						
63	Reserved for backwards compatibility						
64	Reserved for backwards compatibility						
65	Reserved for backwards compatibility						
66	Reserved for backwards compatibility						
67	Reserved for backwards compatibility						
68-70	reserved for future use						

Number	Name	Description	Standard Event log	Fraud Detection Log	Communication Session Log	M-Bus Event Log	Voltage Quality Event Log
71	Metrological Maintenance	Technical maintenance of the meter (Comlog Code 1)			X		
72	Technical Maintenance	Technical maintenance of the grid (Comlog Code 2)			X		
73	Retrieve meter readings E	Retrieving of meter readings E (Comlog Code 3)			X		
74	Retrieve meter readings G	Retrieving of meter readings G (Comlog Code 4)			X		
75	Retrieve interval data E	Retrieving of interval data E (Comlog Code 5)			X		
76	Retrieve interval data G	Retrieving of interval data G (Comlog Code 6)			X		
77-79	Reserved for future use						
80	PV Voltage sag L1	IBM/Kaifa only (FW 27 and later). Indicates that the voltage has dropped below the set threshold value for voltage and time duration.					X
81	PV Voltage sag L2	IBM/Kaifa only (FW 27 and later). Indicates that the voltage has dropped below the set threshold value for voltage and time duration.					X
82	PV Voltage sag L3	IBM/Kaifa only (FW 27 and later). Indicates that the voltage has dropped below the set threshold value for voltage and time duration.					X
83	PV Voltage swell L1	IBM/Kaifa only (FW 27 and later). Indicates that the voltage has risen above the set threshold value for voltage and time duration.					X
84	PV Voltage swell L2	IBM/Kaifa only (FW 27 and later). Indicates that the voltage has risen above the set threshold value for voltage and time duration.					X
85	PV Voltage swell L3	IBM/Kaifa only (FW 27 and later). Indicates that the voltage has risen above the set threshold value for voltage and time duration.					X
86	Phase Outage L1	Indicates a phase power outage has been detected on L1 (and a phase outage alarm sent)					X
87	Phase Outage L2	Indicates a phase power outage has been detected on L2 (and a phase outage alarm sent)					X
88	Phase Outage L3	Indicates a phase power outage has been detected on L3 (and a phase outage alarm sent)					X
89	Phase Outage Test	Indicates a phase power outage test has been indicated (and a phase outage test indication alarm sent)					X
90-99	Reserved for future use						
100	Communication error M-Bus channel 1	Indicates a communication problem when reading the meter connected to channel 1 of the M-Bus				X	
101	Communication ok M-Bus channel 1	Indicates that the communication with the M-Bus meter connected to channel 1 of the M-Bus is ok again.				X	

Number	Name	Description	Standard Event log	Fraud Detection Log	Communication Session Log	M-Bus Event Log	Voltage Quality Event Log
102	Replace Battery M-Bus channel 1	Indicates that the battery must be exchanged due to the expected end of life time.				X	
103	Fraud attempt M-Bus channel 1	Indicates that a fraud attempt has been registered.				X	
104	Clock adjusted M-Bus channel 1	Indicates that the clock has been adjusted. (Only in case of a large time adjustment)				X	
105	New M-Bus device discovered channel 1	Indicates that a new M-Bus Device has been detected on channel 1 of the M-Bus				X	
106	Permanent error from M-Bus device channel 1	Indicates that a Permanent error has been received from the M-Bus device. The Permanent error can be a self-check error, or any other fatal device error that requires a service action				X	
107-109	reserved for future use						
110	Communication error M-Bus channel 2	Indicates a communication problem when reading the meter connected to channel 2 of the M-Bus				X	
111	Communication ok M-Bus channel 2	Indicates that the communication with the M-Bus meter connected to channel 2 of the M-Bus is ok again.				X	
112	Replace Battery M-Bus channel 2	Indicates that the battery must be exchanged due to the expected end of life time.				X	
113	Fraud attempt M-Bus channel 2	Indicates that a fraud attempt has been registered in the M-Bus device.				X	
114	Clock adjusted M-Bus channel 2	Indicates that the clock has been adjusted. (Only in case of a large time adjustment)				X	
115	New M-Bus device discovered channel 2	Indicates that a new M-Bus Device has been detected on channel 2 of the M-Bus				X	
116	Permanent error from M-Bus device channel 2	Indicates that a Permanent error has been received from the M-Bus device. The Permanent error can be a self-check error, or any other fatal device error that requires a service action				X	
117-119	reserved for future use						
120	Communication error M-Bus channel 3	Indicates a communication problem when reading the meter connected to channel 3 of the M-Bus				X	
121	Communication ok M-Bus channel 3	Indicates that the communication with the M-Bus meter connected to channel 3 of the M-Bus is ok again.				X	
122	Replace Battery M-Bus channel 3	Indicates that the battery must be exchanged due to the expected end of life time.				X	
123	Fraud attempt M-Bus channel 3	Indicates that a fraud attempt has been registered.				X	
124	Clock adjusted M-Bus channel 3	Indicates that the clock has been adjusted. (Only in case of a large time adjustment)				X	

Number	Name	Description	Standard Event log	Fraud Detection Log	Communication Session Log	M-Bus Event Log	Voltage Quality Event Log
125	New M-Bus device discovered channel 3	Indicates that a new M-Bus Device has been detected on channel 3 of the M-Bus				X	
126	Permanent error from M-Bus device channel 3	Indicates that a Permanent error has been received from the M-Bus device. The Permanent error can be a self-check error, or any other fatal device error that requires a service action				X	
127-129	reserved for future use						
130	Communication error M-Bus channel 4	Indicates a communication problem when reading the meter connected to channel 4 of the M-Bus				X	
131	Communication ok M-Bus channel 4	Indicates that the communication with the M-Bus meter connected to channel 4 of the M-Bus is ok again.				X	
132	Replace Battery M-Bus channel 4	Indicates that the battery must be exchanged due to the expected end of life time.				X	
133	Fraud attempt M-Bus channel 4	Indicates that a fraud attempt has been registered.				X	
134	Clock adjusted M-Bus channel 4	Indicates that the clock has been adjusted. (Only in case of a large time adjustment)				X	
135	New M-Bus device discovered channel 4	Indicates that a new M-Bus Device has been detected on channel 4 of the M-Bus				X	
136	Permanent error from M-Bus device channel 4	Indicates that a Permanent error has been received from the M-Bus device. The Permanent error can be a self-check error, or any other fatal device error that requires a service action				X	
137-159	reserved for future use						
160	Reserved for backwards compatibility						
161	Reserved for backwards compatibility						
162	Reserved for backwards compatibility						
163	Reserved for backwards compatibility						
164	Reserved for backwards compatibility						
165-169	reserved for future use						
170	Reserved for backwards compatibility						

Number	Name	Description	Standard Event log	Fraud Detection Log	Communication Session Log	M-Bus Event Log	Voltage Quality Event Log
171	Reserved for backwards compatibility						
172	Reserved for backwards compatibility						
173	Reserved for backwards compatibility						
174	Reserved for backwards compatibility						
175-179	reserved for future use						
180	Reserved for backwards compatibility						
181	Reserved for backwards compatibility						
182	Reserved for backwards compatibility						
183	Reserved for backwards compatibility						
184	Reserved for backwards compatibility						
185-189	reserved for future use						
190	Reserved for backwards compatibility						
191	Reserved for backwards compatibility						
192	Reserved for backwards compatibility						
193	Reserved for backwards compatibility						
194	Reserved for backwards compatibility						
195-229	reserved for future use						
230-249	manufacturer specific	Manufacturer specific events can be registered					
250-254	reserved for future use						

Number	Name	Description	Standard Event log	Fraud Detection Log	Communication Session Log	M-Bus Event Log	Voltage Quality Event Log

The event code is not available as a register and is of type Unsigned. To identify the event code in the different event logs, the following OBIS codes are used in the capture_objects attribute of the event log:

0-0:96.11.0.255 Standard event Log
0-0:96.11.1.255 Fraud detection Log
0-0:96.11.3.255 M-Bus event log
0-0:96.11.4.255 Communication Session event log
0-0:96.11.5.255 Voltage Quality event log

5. Updated description of Communication Sessions Log in section 4.2.2:
Communication Sessions Event Log [0-0:99.98.4.255] (paragraph 5.10)
Contains all events related to the communication sessions, e.g. retrieving of meter reading, maintenance of the meter, maintenance of the grid, etc. Detailed information about which event type should be used for every OBIS-Object is given in the “Configuration Items” excelsheet.

   Events are logged at the end of an application association when one of the services mentioned in section 2.1.3 is called.

   Only service calls for the “value” attribute of OBIS-Objects which hold the register values will be counted for events 73 thru 76. Service Calls on the other attributes of these OBIS-Object will be regarded as event 71.

   Reading (a subset of) the actual registers for E or the last hourly for G register shall be seen as one meter reading and the corresponding counter shall be incremented by 1, the assumption is that these values will be read at the same time. Also reading the data from a profile (for E or G) for one timestamp shall result in a increment of the corresponding counter by 1. This behavior is described in the footnotes on DSMR Main section 5.15. This means in case of daily and monthly values the timestamp in the load profiles where the register values are stored are used. In case of actual meter reading the actual time is used because there is no timestamp stored

   Structure: Timestamp – Event Code – Corresponding counter

Size: 2190 entries

6. Added in section 4.2.2
   Voltage Quality Event Log [0-0:99.98.5.255] (paragraph 7.5)
   Contains all events related to the voltage quality
   Structure: Timestamp – Event Code
   Size: 100 entries

7. In section 4.2.3 changed table with normal error codes:

Group	Byte	Bit	Meaning	Events
Other Errors	1 (LSB)	0	Clock invalid	6
		1	Replace battery	7
		2	Power Up	2
		3	not used	
		4	not used	
		5	not used	
		6	not used	
		7	not used	
Critical Errors	2	0	Program memory error	12
		1	RAM Error	13
		2	NV memory Error	14
		3	Measurement System Error	16
		4	Watchdog error	15
		5	Fraud attempt	40, 42, 44, 46, 47
		6	not used	
		7	not used	
M-Bus Errors	3	0	Communication error M-Bus channel 1	100
		1	Communication error M-Bus channel 2	110
		2	Communication error M-Bus channel 3	120
		3	Communication error M-Bus channel 4	130
		4	Fraud attempt M-Bus channel 1	103
		5	Fraud attempt M-Bus channel 2	113
		6	Fraud attempt M-Bus channel 3	123
		7	Fraud attempt M-Bus channel 4	133
Reserved	4 (MSB)	0	New M-Bus device discovered channel 1	105
		1	New M-Bus device discovered channel 2	115
		2	New M-Bus device discovered channel 3	125
		3	New M-Bus device discovered channel 4	135
		4	Phase Outage detected on L1	86
		5	Phase Outage detected on L2	87
		6	Phase Outage detected on L3	88
		7	Phase Outage Test indication	89

8. In section 4.2.4 changed table with alarm codes

Group	Byte	Bit	Meaning	Events
Other Alarms	1 (LSB)	0	Clock invalid	6
		1	Replace battery	7
		2	Power Up	2
		3	not used	
		4	not used	
		5	not used	
		6	not used	
		7	not used	
Critical Alarms	2	0	Program memory error	12
		1	RAM Error	13
		2	NV memory Error	14
		3	Measurement System Error	16
		4	Watchdog error	15
		5	Fraud attempt	40, 42, 44, 46, 47
		6	not used	
		7	not used	
M-Bus Alarms	3	0	Communication error M-Bus channel 1	100
		1	Communication error M-Bus channel 2	110
		2	Communication error M-Bus channel 3	120
		3	Communication error M-Bus channel 4	130
		4	Fraud attempt M-Bus channel 1	103
		5	Fraud attempt M-Bus channel 2	113
		6	Fraud attempt M-Bus channel 3	123
		7	Fraud attempt M-Bus channel 4	133
Reserved	4 (MSB)	0	New M-Bus device discovered channel 1	105
		1	New M-Bus device discovered channel 2	115
		2	New M-Bus device discovered channel 3	125
		3	New M-Bus device discovered channel 4	135
		4	Phase Outage detected on L1	86
		5	Phase Outage detected on L2	87
		6	Phase Outage detected on L3	88
		7	Phase Outage Test indication	89

9. In section 5.9 added the following OBIS code:

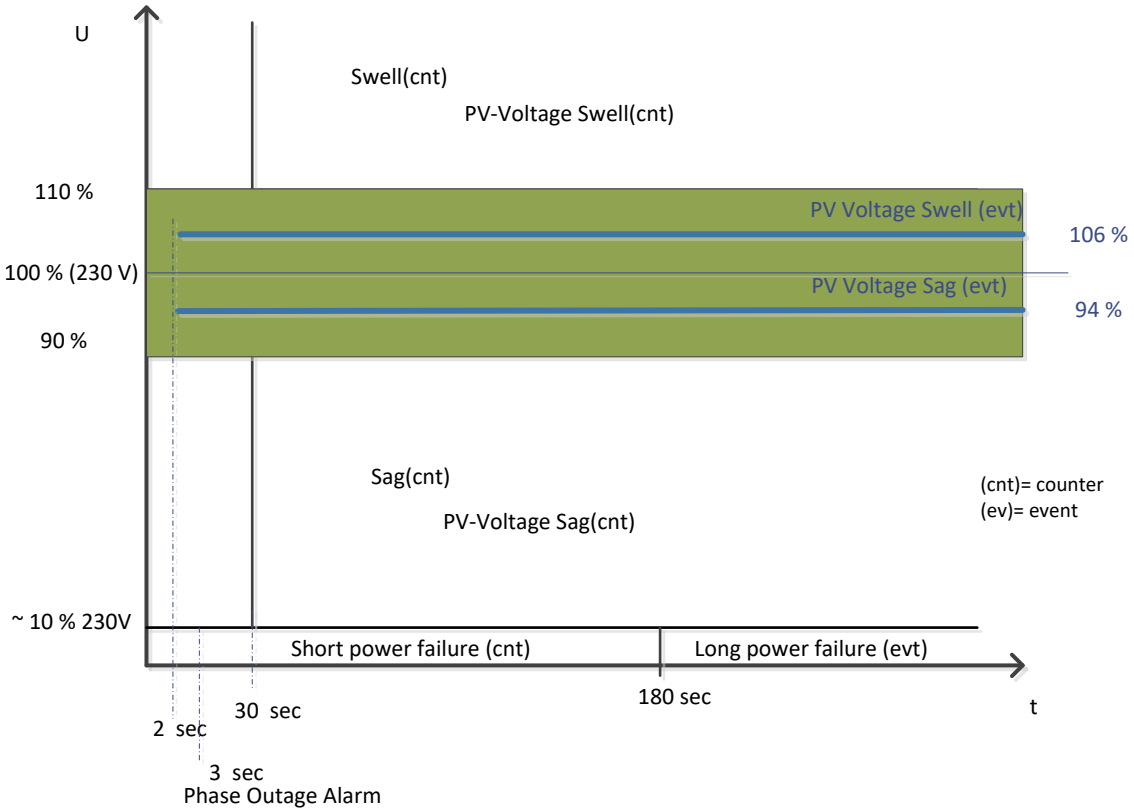
Voltage Quality Event Log (Class ID: 7, version: 1)			**Available in: IBM/Kaifa ≥ FW30: SP, PP**	**P**	**M**	**Pr**
1	Logical name	Octet-string	**0-0:99.98.5.255**		R	
2	buffer	array			R	
3	capture_objects	Array [2]	{8,0-0:1.0.0.255,2,0}; {1,0-0:96.11.5.255,2,0} (= timestamp; Voltage Quality event code) (See definitions of event codes in paragraph 4.2.1.)		R	
4	capture_period	double-long-unsigned	0, asynchronously		R	
5	sort_method	enum	1, unsorted (FIFO)		R	
6	sort_object	object definition	None, unsorted		R	
7	entries_in_use	double-long-unsigned			R	
8	profile_entries	double-long-unsigned	100		R	
	Specific methods	***m/o***				
1	reset ()	m			X	
2	capture ()	m				
3	Reserved from previous versions					
4	Reserved from previous versions					

11. In section 6.5 added the following:

Power quality thresholds

The voltage definitions defined in this chapter and in chapter 5.9 and 6.6 are depicted in the next figure.

For example, a voltage of 150 V which exists for a period longer than 30 s is a “SAG” and a “PV Voltage SAG”.



12. Added section 6.6 Power Quality (Photo Voltage):

6.6 Power Quality (Photo Voltage)

The functionality for PV power quality monitoring is only available in the IBM/Kaifa meter from firmware V30.

Threshold for PV voltage sag (Class ID: 3)			Available in: IBM/Kaifa ≥ FW30: SP, PP	P	M	Pr
1	Logical name	Octet-string	**1-2:12.31.0.255**		R	
2	Value	long-unsigned	Value = 212, threshold for the detection of PV voltage sags, programmable according to requirements of the GO		RW	
3	Scal_unit	scal_unit_type	Value = {0,35}, scaler=0, unit=V		R	
	Specific methods	***m/o***				
	reset (data)	o				

Time threshold for PV voltage sag (Class ID: 3)			Available in: IBM/Kaifa ≥ FW30: SP, PP	P	M	Pr
1	Logical name	Octet-string	**1-2:12.43.0.255**		R	
2	Value	long-unsigned	Value = 2, duration of the PV voltage sag until it is detected, programmable according to requirements of the GO		RW	
3	Scaler_unit	scal_unit_type	Value = {0,7}, scaler=0, unit=seconds		R	
	Specific methods	***m/o***				
	reset (data)	o				

Number of PV voltage sags in phase L1 (Class ID: 1)			Available in: IBM/Kaifa ≥ FW30: SP, PP	P	M	Pr
1	Logical name	Octet-string	**1-2:32.32.0.255**		R	
2	Value	long-unsigned	Number of PV voltage sags		R	
	Specific methods	***m/o***				
	reset (data)	o				

Number of PV voltage sags in phase L2 (Class ID: 1)			Available in: IBM/Kaifa ≥ FW30: PP	P	M	Pr
1	Logical name	Octet-string	**1-2:52.32.0.255**		R	
2	Value	long-unsigned	Number of PV voltage sags		R	
	Specific methods	***m/o***				
	reset (data)	o				

Number of PV voltage sags in phase L3 (Class ID: 1)			Available in: IBM/Kaifa ≥ FW30: PP	P	M	Pr
1	Logical name	Octet-string	**1-2:72.32.0.255**		R	
2	Value	long-unsigned	Number of PV voltage sags		R	
	Specific methods	***m/o***				
	reset (data)	o				

Threshold for PV voltage swell (Class ID: 3)			Available in: IBM/Kaifa ≥ FW30: SP, PP	P	M	Pr
1	Logical name	Octet-string	**1-2:12.35.0.255**		R	
2	Value	long-unsigned	Value = 248, threshold for the detection of PV power swells, programmable according to requirements of the GO		RW	
3	Scaler_unit	scal_unit_type	Value = {0,35}, scaler=0, unit=V		R	
	Specific methods	***m/o***				
	reset (data)	o				

Time threshold for PV voltage swell (Class ID: 3)			Available in: IBM/Kaifa ≥ FW30: SP, PP	P	M	Pr
1	Logical name	Octet-string	**1-2:12.44.0.255**		R	
2	Value	long-unsigned	Value = 2, duration of the PV voltage swell until it is detected, programmable according to requirements of the GO		RW	
3	Scaler_unit	scal_unit_type	Value = {0,7}, scaler=0, unit=seconds		R	
	Specific methods	***m/o***				
	reset (data)	o				

Number of PV voltage swells in phase L1 (Class ID: 1)			Available in: IBM/Kaifa ≥ FW30: SP, PP	P	M	Pr
1	Logical name	Octet-string	**1-2:32.36.0.255**		R	
2	Value	long-unsigned	Number of PV voltage swells		R	
	Specific methods	***m/o***				
	reset (data)	o				

Number of PV voltage swells in phase L2 (Class ID: 1)			Available in: IBM/Kaifa ≥ FW30: PP	P	M	Pr
1	Logical name	Octet-string	**1-2:52.36.0.255**		R	
2	Value	long-unsigned	Number of PV voltage swells		R	
	Specific methods	***m/o***				
	reset (data)	o				

Number of PV voltage swells in phase L3 (Class ID: 1)			Available in: IBM/Kaifa ≥ FW30: PP	P	M	Pr
1	Logical name	Octet-string	**1-2:72.36.0.255**		R	
2	Value	long-unsigned	Number of PV voltage swells		R	
	Specific methods	***m/o***				
	reset (data)	o				

13. Added Section 8.8:

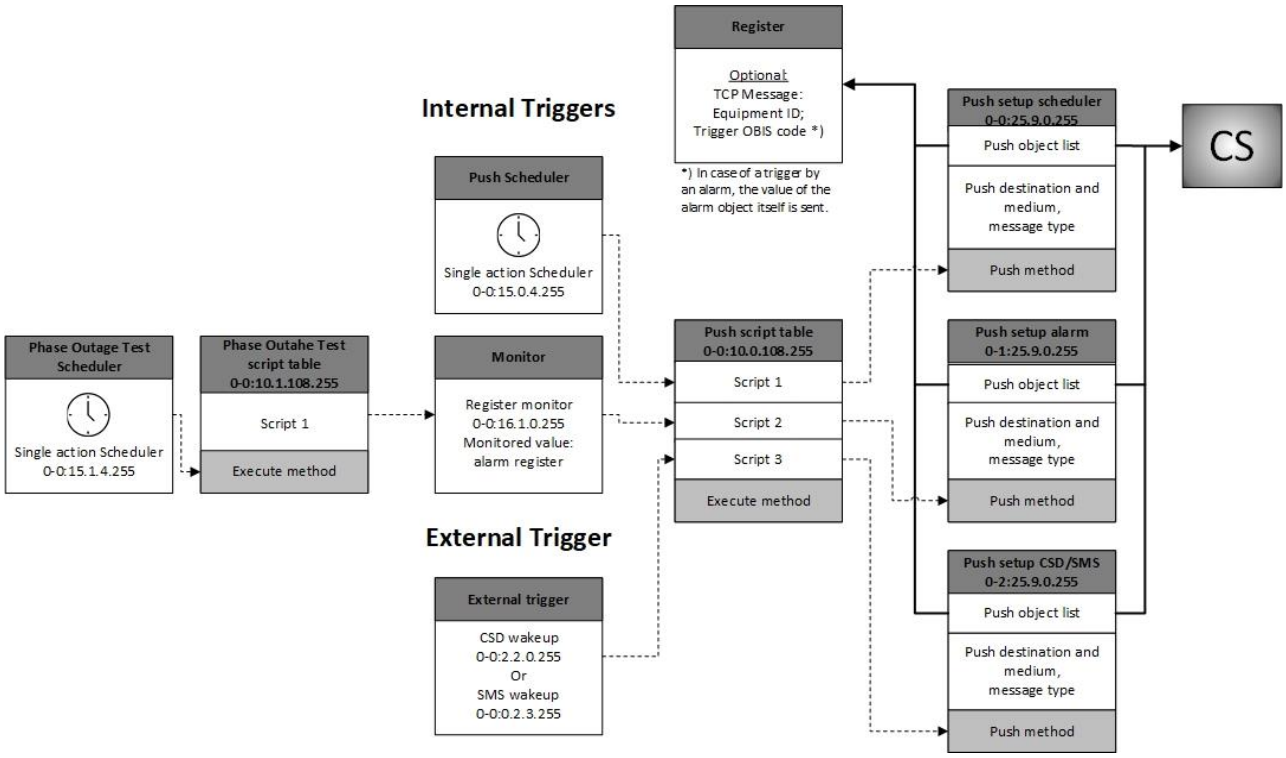
8.8 Equipment connected at P1

Equipment connected at P1 (Class ID: 1, version : 0)			Available in: SP, PP	P	M	Pr
1	Logical name	Octet-string	**0-0:96.4.1.255**		R	
2	Value	Boolean	Value = 1 (Equipment connected at P1) Value = 0 (Equipment not connected at P1)		R	
	Specific methods	***m/o***				
	reset (data)	o				

Explanatory note:

1. The Boolean state will be updated to value =1 when the P1 device is attached (i.e. when the P1 request line is activated).
2. The Boolean state will be updated to value=0 when the P1 device is removed (i.e. when the P1 request line is released).

14. In section 9 updated the figure:



15. Updated Single Action Scheduler

Single action scheduler (Class ID: 22, version=0)			Available in: SP, PP	P	M	Pr
1	logical_name	Octet string	0-0:15.0.4.255		R	
2	Executed_script	script	Contains the script which contains the push method invocation of the Push Setup Scheduler object.		RW	
3	Type	enum	Default value 1 is used.		RW	
4	Execution time	array	Contains the trigger moment. An empty array means that the functionality is not used.		RW	
	Specific methods	***m/o***				

16. Added section 9.1.2.1 Phase Outage Test Scheduler

9.1.2.1 Phase Outage Test Scheduler

The meter can send Alarm Push for Phase Outage Test on scheduled basis. On the scheduled time, indicated by the Execution time (attribute 4) the associated script in Phase Outage Test Script table is executed. This script is executed and the Phase Outage Test indication bit in Alarm Register will be set, triggering the sending of the Push on Alarm. In case this functionality is not used, the Execution time will be empty.

Single action scheduler (Class ID: 22) Phase Outage Test Scheduler			Available in: PP	P	M	Pr
1	logical_name	octet-string	0-0:15.1.4.255		R	
2	executed_script	script	Contains the logical name of the 'alarm push phase outage test script table' (0-0:10.1.108.255) and the script selector (1) of the script which contains the write attribute action to set the Phase Outage Test indication bit in Alarm Register.		R	
3	type	enum	Value 1 is used.		R	
4	execution time	array	Contains the trigger moment. An empty array means that the functionality is not used		RW	
	Specific methods	***m/o***				

17. Added section 9.1.2.2 Phase Outage Test script table

    9.1.2.2 Phase Outage Test script table

    The Phase Outage Test script table holds script to activate the alarm push operation in case Phase Outage Test is performed. There is 1 entry in the script array. Entry in the array of scripts sets the Phase Outage Test indication bit in Alarm Register to 1, while keeping other bits unmodified.

Script table (Class ID: 9, Version: 0) Push Phase Outage Test Script table			Available in: PP	P	M	Pr
1	logical_name	octet-string	0-0:10.1.108.255		R	
2	scripts	array	Contains the script which contains the setting of attribute 2 of Alarm register with the value 1 of Phase Outage Test indication bit. With the set of the Phase Outage Test indication bit, the other bits of Alarm register remain unmodified.		R	
	Specific methods	***m/o***				
1	*execute(data)*	***m***	Data contains the entry in the script table (1)		X	

18. In Annex B removed the following line:

0-1:94.31.0.255	Administrative In/Out status: Administrative On ("Administratief In")