Release Notes DSMR4.2.2

Dutch Smart Meter Requirements

Date:	**March 14th, 2014**
Version:	**4.2.2**
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

CONTENTS

1 INTRODUCTION

This document describes the changes incorporated in the Dutch Smart Meter Requirements version v4.2.2 compared to the previous version of the DSMR v4.2.1 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 v4.2.2 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 v4.2.2 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 V4.2.2 MAIN CHANGES

This section lists all the changes incorporated in the Dutch Smart Meter Requirements v4.2.2 Final Main document. Minor editorial corrections are not listed.

1. Throughout the document removed terms as switch, switching, (dis)connecting, valve etc. and changed sentences accordingly where needed.

2. Throughout the document replaced the terms ‘E-Equipment’ and ‘G-Equipment’ with ‘E meter’ and ‘G meter’.

3. In section 1.6 changed the name ‘Technical Specification Team’ to ‘Working Group DSMR’.

4. In section 2.4 removed the following definitions :

E-equipment	All equipment installed at the premises of the consumer for measuring consumption of electricity or for (dis)connecting electricity. E-equipment therefore includes: E meter and E-breaker.	
G-equipment	All equipment installed at the premises of the consumer for measuring consumption of gas or for (dis)connecting gas. G-equipment therefore includes: G meter and G-valve (when fitted).	
Switch	Switching device for either electricity or gas. Switching devices for E are called (E-) breakers, switching devices for G as called (G-) valves.	

5. In section 2.5.1.1 removed the following definitions:

Control Mode	Indicates if the E connection can be disconnected. For some connections the GO wants to prevent the breaker to be operational. Setting the value for this attribute to ‘false’ actually disables the breaker.	Yes	Yes
Threshold value	The value for threshold E, specified in Watt	Yes	Yes
Breaker position	The position of the breaker (on / off).	Yes	Yes
Limiter threshold value	The threshold above the breaker is activated after a certain time	Yes	Yes
Limiter threshold time	Duration of exceeding the threshold witch activates the breaker	Yes	Yes
Allow local disconnect	Indicates whether the electricity meter can be switched off locally.	Yes	Yes

6. In section 2.5.1.2 removed the following definition:

Valve position	The position of the valve: open / closed / released (ready to be turned on).	Yes	Yes

7. In section 2.6 removed the following definitions:

(Dis)connect request	A (dis)connect request is used to remotely (de)activate a meter. Such a request contains the following parameters: ▪ Connect or disconnect; ▪ Time stamp of connect or disconnect (optional); ▪ Reason of disconnect (optional), for example “on demand”, “Code Red”
(Dis)connect logging information	The logging information for (dis)connects shall contain the following information: ▪ Position of the breaker after the (dis)connect has been applied; ▪ Reason, e.g. “on demand”, “exceed threshold” (in case of disconnect); ▪ Time stamp of the moment the (dis)connect has been applied. In case of a (dis)connect of a gas meter, the position of the valve must be given (instead of the position of the breaker).
Apply threshold logging information	The Apply threshold (electricity) logging information shall contain the following information: ▪ New threshold value (specified in Watt); ▪ Time stamp of the moment at which the threshold was applied.

8. In section 3.1 removed requirement DSMR-M 4.3.1:

Description	All M&S equipment shall comply with NTA 8130.						
Rationale	NTA 8130 defines the minimal set of requirements that apply to M&S equipment.						
Fit criterion	The GO’s will jointly develop a test program for verifying the equipment according to the NTA. Equipment that passes this test will be considered NTA compliant. Vendors of equipment will receive the specifications of the test program to verify compliancy.						
History	Nov. 2007	**Origin**	NTA	**Port**	n.a.	**Applicable**	E meter, G meter

9. In section 3.1 updated requirement DSMR-M 4.3.4:

Description	The vendor of equipment has to meet the requirements for life time expectancy.
Rationale	The minimum life time expectancy must be 20 years
Fit criterion	Suppliers should clearly show the expected life time of their products. The minimum technical lifetime for all the components of E and G meters is 20 years without maintenance or replacement of the battery. Life time expectancy of the battery of the G meter is calculated using the following conditions: ▪ The use of the display ▪ Hourly communication between G meter and E meter ▪ ~~Valve operation 10 times a year.~~ ▪ Yearly update of software (if applicable) ▪ Normal operation of the meter under normal operating conditions Reliability predictions must be done as described in IEC 62059-41. Estimation of the product life time must be done as described in IEC 62059-31-1.

	For FMEA calculations MIL-HDBK-217 (Electronic Reliability Design handbook) must be used. The results shall be clearly documented and must be available for the grid operator or an external party representing the grid operator.						
History	Dec. 2008	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter, G meter, Comm. unit

10. In section 3.1 added a new requirement DSMR-M 4.3.90

Description	It is not allowed to have a breaker or valve present in the meter						
Rationale	Because the decision of the department of Economic Affairs, a breaker and valve are removed from the 'AmvB metereisen GSA'						
Fit criterion	The meter does not have a breaker or valve installed .						
History	Mar. 2014	**Origin**	WGDSMR	**Port**	n.a.	**Applicable**	E meter, G meter

11. In section 3.2 updated requirement DSMR-M 4.3.35:

Description	The status information displayed on the E meter by flags shall be standardised.						
Rationale	Through standardization of the status information on the display, the customer processes can be standardized.						
Fit criterion	For status information flags are required: • An indication if the meter is administrative on or off. Two flags for three possibilities Undefined (Factory setting) (value attribute 2 = 0); flag 1 and 2 off Administrative off (value attribute 2 = 1): flag 1 on or Default (value attribute 2 = 2): flag 2 on Identification is based on OBIS code 0-1:94.31.0.255 attribute 2 ~~• An indication if the limiter function is active or not.~~ ~~Limiter on: (value attribute 3 ≠ 999999): flag on~~ ~~Limiter off: (value attribute 3 = 999999): flag off~~ ~~Identification is based on OBIS code 0-0:17.0.0.255 attribute 3~~ • An indication if the communication module is attached to the network • An indication per phase if the voltage is present • An indication for a successful self-check (Only visible in service mode) • Minimal 3 reserved flags for future use Flags are (together with register values) always visible in manual scroll mode, auto-scroll mode and service mode.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

12. In section 3.2 updated requirement DSMR-M 4.3.36:

Description	The information displayed on the E meter other than mentioned in DSMR-M 4.3.35 shall be standardised.						
Rationale	Through standardization of the information displayed on the E meter, the customer processes can be standardized.						
Fit criterion	Additional to flags, the display shall at least contain the following symbols: ▪ GPRS Signal Strength (4 levels). ▪ Actual energy Direction. ▪ ~~Breaker Open/Closed (based on OBIS code 0-0:96.3.10.255 attribute 2)~~						
History	Apr. 2011	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

13. In section 3.2 removed requirement DSMR-M 4.3.39:

Description	The E meter shall have an E breaker as an integrated part.						
Rationale	In order to reduce costs for installation the E meter shall incorporate the E breaker.						
Fit criterion	The E meter and E breaker shall be delivered as a single installable unit.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

14. In section 3.2 removed requirement DSMR-M 4.3.40:

Description	The E breaker shall be able to perform a sufficient number of (dis)connections during its lifecycle without any maintenance and failures.
Rationale	As maintenance on equipment is expensive, planned maintenance has to be reduced to nil under circumstances of normal usage. In normal usage also short circuit currents can occur, therefore the equipment must: ▪ Withstand minimal conditions without being damaged ▪ Withstand minimal conditions without causing damage or danger to its direct environment ▪ Endurance 1: the meter shall be capable of at least 3000 operation cycles at 80 Ampère at PF1 ▪ Endurance 2: In addition to “Endurance 1” , the meter shall be capable of at least 2000 operation cycles at 80 Ampère at PF0.5
Fit criterion	The Circuit Breaker in the E meter must comply with the following criteria from IEC 62055-31 Annex C ▪ C5: Fault Current making capacity at UC2 level (2,5 kA) ▪ C6: Short-circuit current carrying capacity at UC2 level (2,5 kA) ○ Test 2 : at UC2 level (2,5 kA) ○ Test 1 : at UC3 level (6 kA) ▪ C8: Dielectric strength The Circuit Breaker in the E meter must meet the following endurance requirements, derived from IEC 62055-31 Annex C/C3: - 3000 operation cycles at 80 Ampère, PF1. - 2000 operation cycles at 80 Ampère, PF 0,5 inductive In domestic installations the circuit-breaker will be protected by a protection device. In combination with a protection device the circuit-breaker must be able to withstand short circuits of 10 kA according the following conditions:

	▪ Prospected Short-circuit current: 10 kA; U= 230VAC: PF0,5 ▪ Meter circuit protected by an electromechanical protection relay 80 A ▪ A short circuit connection: 2 * 0,5 m; 16 mm^2 ▪ 5 tests short-circuit carrying and 5 tests short circuit making capacity						
History	Nov. 2007	**Origin**	NTA	**Port**	n.a.	**Applicable**	E meter

15. In section 3.2 removed requirement DSMR-M 4.3.41:

Description	The E breaker shall affect all phases as the result of a position change.						
Rationale	Poly-phase meters use a single breaker for all phases as there is no need to (dis)connect individual phases independently.						
Fit criterion	All phases on a connection are either all connected or all disconnected at any time. Neutral shall not be switched.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

16. In section 3.2 removed requirement DSMR-M 4.3.42:

Description	Switching equipment shall always be in a defined state.						
Rationale	All switch equipment (electricity breakers) has two positions and shall only change position as the result of a switching activity.						
Fit criterion	Switching equipment shall be bi-stable.						
History	Nov. 2007	**Origin**	NTA 8130	**Port**	n.a.	**Applicable**	E meter

17. In section 3.3 updated requirement DSMR-M 4.3.54

Description	It should be possible to activate additional functions of the G meter.						
Rationale	Only one button is used for all functions.						
Fit criterion	Only one button is used to ~~operate the valve manually, to~~ activate service mode and show Legally Relevant software versions.						
History	Mar. 2011	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

18. In section 3.3 updated the requirement DSMR-M 4.3.57:

Description	Power consumption of G meter shall be minimised.						
Rationale	For economic and environmental reasons the power consumption of the meter shall be minimized. Besides this it is important to reduce power consumption in G meters that are powered by a battery as replacement of batteries is expensive. Finally the power used by G meters that use M-Bus as a power source shall not exceed the maximum power delivered by M-Bus. ~~Please note that operation of the valve consumes power too.~~						
Fit criterion	The lifetime of the battery in the G meter shall exceed the lifetime of the G meter in situations where communication is restricted to the requirements stated in this document.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

19. In section 3.3 updated the requirement DSMR-M 4.3.58:

Description	The G meter shall be compatible with the PN-class ≥ 0.2 bar.						
Rationale	The G meters will be used to connect customers to 30 and 100 mbar grids. In some cases standard 100 mbar grids are operated at 200 mbar. In case the household pressure regulator fails, the G meter can be subjected to 200 mbar.						
Fit criterion	No leakage and no permanent damage shall occur and all functionalities ~~(e.g. opening and closing the valve)~~ will be maintained in a 200 mbar pressure test.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

20. In section 3.3 removed requirement DSMR-M 4.3.67:

Description	For G meters ≤ G6 a G valve as an integrated part is mandatory. For G meters > G6 a G valve is not allowed.						
Rationale	In order to reduce costs for installation the G meter shall incorporate the G valve.						
Fit criterion	When applicable, the G meter and G valve shall be delivered as a single installable unit.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

21. In section 3.3 removed requirement DSMR-M 4.3.68:

Description	The controlling of the G valve must be electronically.						
Rationale	Controlling of the G valve shall be possible local and remotely. Mechanical controlling is not allowed.						
Fit criterion	Controlling of the G valve must be electronically in a safe and reliable way.						
History	Nov. 2007	**Origin**	NTA 8130	**Port**	n.a.	**Applicable**	G meter

22. In section 3.3 removed requirement DSMR-M 4.3.69:

Description	Switching equipment shall be bi-stable.						
Rationale	The gas valve has two positions and shall only change position as the result of a switching activity.						
Fit criterion	The gas valve will only change position as the result of a switching command.						
History	Nov. 2007	**Origin**	NTA 8130	**Port**	n.a.	**Applicable**	G meter

23. In section 3.3 removed requirement DSMR-M 4.3.70:

Description	The G valve must be able to withstand at least a pressure of 200mbar in the closed position.						
Rationale	The G valve shall be safe and reliable and must be able to withstand a certain pressure in the closed position.						
Fit criterion	A pressure of at least 200mbar is withstood by the G valve in the closed position.						
History	Aug. 2010	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

24. In section 3.3 removed requirement DSMR-M 4.3.71:

Description	The G valve shall only open if it has been determined that the gas installation uses less than 13 litres per hour.						
Rationale	The valve shall only open after a leakage control.						
Fit criterion	After opening of the G valve the amount of gas measured may not be greater then 1 litre. The measuring time starts 5 seconds after opening and will be 5 minutes. If the accuracy of the G meter is high enough to determine the allowed flow in a shorter time period then this is allowed. In case the flow is greater than is allowed, the valve has to be shut immediately. This applies to both automatic or manual (re)connection If it has been determined that the gas installation uses less than 13 litres per hour, the G valve can be opened.						
History	Aug. 2010	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

25. In section 3.3 removed requirement DSMR-M 4.3.72:

Description	With the G valve in the closed position and with a pressure of 20 mbar, the leakage of the gas valve must be less than 1 litre per hour. At Pmax of the meter, the leakage of the gas valve must be less than 5 litres per hour.						
Rationale	Any equipment with the gas supply switched off can have a certain amount of leakage. The gas meter must be safe and reliable, therefore this leakage at Pmax must remain within the limits.						
Fit criterion	At a pressure of 20 mbar and with a closed gas valve, the leakage of the gas valve must be less than 1 litre per hour. At Pmax of the meter, the leakage of the gas valve must be less than 5 litres per hour.						
History	Aug. 2010	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

26. In section 3.3 removed requirement DSMR-M 4.3.73:

Description	The G valve must be able to open with a counter pressure of at least 50 mbar						
Rationale	The G valve shall be safe and reliable and must be able to open and close at certain pressures.						
Fit criterion	The G valve must be able to open with a counter pressure of at least 50 mbar						
History	Aug. 2010	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

27. In section 3.3 removed requirement DSMR-M 4.3.74:

Description	The G valve must be able to close at Qr and a counter pressure of 50 mbar.						
Rationale	The G valve shall be safe and reliable and must be able to open and close at certain flow rates and pressures. (Qr is defined as the overload flow rate 1,2Qmax)						
Fit criterion	The G valve must be able to close at Qr and a counter pressure of 50 mbar.						
History	Jan. 2011	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

28. In section 3.3 removed requirement DSMR-M 4.3.75:

Description	The G valve shall perform a sufficient amount of switching operations.						
Rationale	The G valve shall be safe and reliable, and shall operate with minimum manual interaction.						
Fit criterion	The switching equipment shall be able to perform at least 3.000 operations during its lifetime.						
History	Nov. 2007	**Origin**	NTA 8130	**Port**	n.a.	**Applicable**	G meter

29. In section 4.1 removed the following sentence:
    At the moment, collaboration between European countries is being organized, and special directives about security of vital infrastructures are likely to be enforced

30. In section 4.1 removed the following part of the sentence:
    Willful actions by intruders, resulting in modifying settings of assets~~, or disconnecting the customer by operating the electricity-breaker or gas-valve: risks to public health~~ and confidence.

31. In section 4.1 added the following sentence:
    Hijacking of the automated meter by unauthorized persons, leaving the grid operator with no other option as to remediate the meters on customer premises.

32. In section 4.1 removed the following sentence:
    Intrusions could result in critical problems for people who depend on the energy supplier.

33. In section 5.5.1 updated requirement DSMR-M 4.5.28:

Description	The E meter shall provide on the P1 port every 10 seconds the actual status of the E meter~~equipment~~ and the last known status for the G meter ~~equipment~~ available in the E meter.						
Rationale	The actual status of the metering ~~and switching~~ equipment is to be provided to the external service module through the P1 port.						
Fit criterion	The current status of the equipment is provided on the P1 port: ▪ Equipment identifier for the E meter; ▪ Equipment identifier for the G meter; ▪ Actual tariff E; ~~▪ Actual switch position E-breaker (on/off/released);~~ ~~▪ Actual threshold E;~~ • ~~Actual switch position gas valve (on/off/released) (When available).~~						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.2.7.2, §5.5.1.1 and Appendix B)	**Port**	P1	**Applicable**	E meter

34. Removed Section 5.10: Use Case 10: (Dis)connect E:

This section describes the use case for connecting and disconnecting the supply of electrical power. The use case therefore has two types of triggers: one for connecting and one for disconnecting; however, for each type of trigger, there are several possibilities. The trigger description, block diagram and UML sequence diagram are depicted in Figure 5-10. Note that the list in Fig. 5-10a is *not* exhaustive; the mentioned triggers are examples.

Disconnecting

Trigger	Description
Uninhabited	If the premise where the equipment is installed becomes uninhabited, the grid operator can decide to disconnect.
No supplier	If the grid operator determines that there is no supplier for the premise where the equipment is installed, the grid operator can decide to disconnect.
Non-payment	If the supplier has determined that the customer does not pay for the supplied energy, the supplier can decide to disconnect.
Pre-paid credit too low	If the supplier determines that the pre-paid credit for the connection is too low, the supplier can decide to disconnect.
Collective de-activation	In the event of (regional) power shortages, the grid operator can decide to disconnect (and reconnect) a group of customers.

Connecting

Trigger	Description
New inhabitants	If the grid operator determined that the previously uninhabited premises have new inhabitants with a supplier, the grid operator can decide to reconnect.
New supplier	The new supplier for a connection can issue a reconnect.
Bills have been paid	Customers that have paid their bills or increased their prepaid credit are being re-connected.
Pre-paid deposit	If the client has made a deposit for pre-payment the supplier can decide to reconnect the client.
Collective activation	In the event of (regional) power shortages, the grid operator can decide to disconnect (and reconnect) a group of customers.

Figure 5-10a: (Dis)connect E – trigger description

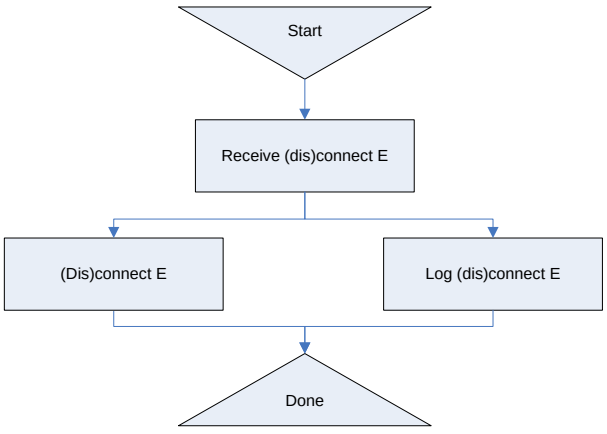


Figure 5-10b: (Dis)connect E – block diagram

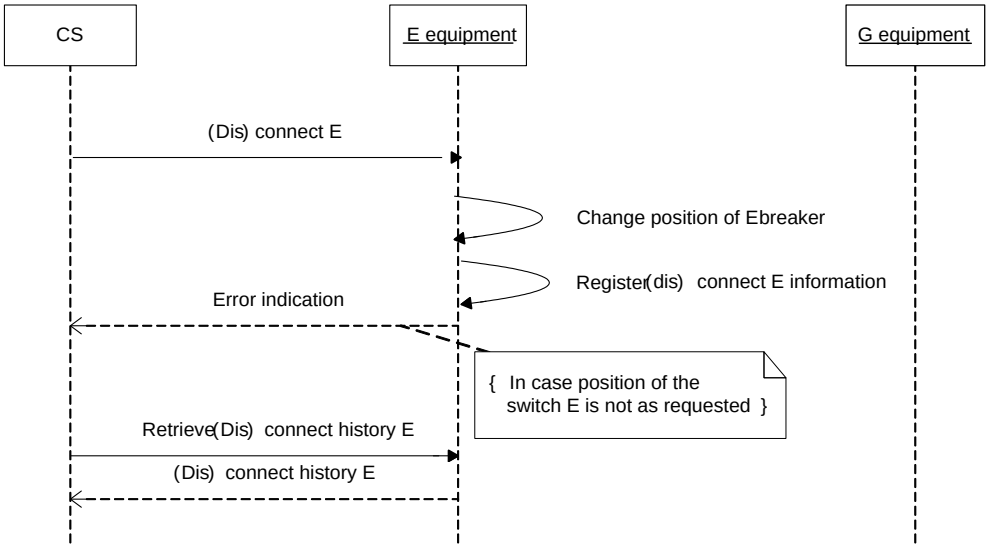


Figure 5-10c: (Dis)connect E – UML sequence diagram

Pre-conditions

- The position of the E breaker has to be changed.

Parameters

- Connect or disconnect;
- Date and time (timestamp) of connect or disconnect (optional);

Post-conditions

- The position of the E breaker has been changed;
- If the (dis)connect has failed, an error message is returned to CS (i.e. in case the position of the E breaker is not as requested).

Assumptions

- It is assumed that groups of meters can be addressed in the software of the CS.

5.10.1 (Dis)connect electricity

DSMR-M 4.5.48

Description	The electricity meter shall provide functionality to remotely (dis)connect the supply of electrical power on the designated date at the specified time. If a timestamp (which is an optional parameter) has not been passed as a parameter, the (dis)connect is to be performed instantly. See also DSMR-M 4.5.54.						
Rationale	The market dynamics require a means to disconnect a customer. Market dynamics include: non-payment, change of supplier, removal, etc.						
Fit criterion	The customer does not receive any electrical power after a disconnect. The supply of electrical power is started after a connect.						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.3)	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.49

Description	The E breaker used to disconnect shall not be available for manual operation.						
Rationale	The breaker shall not be considered as a safety precaution to de-activate the home installation manually. The breaker is therefore available for remote connecting only.						
Fit criterion	It is not possible to use the E breaker to manually de-activate the home installation locally if remote reconnection is enabled.						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.3)	**Port**	n.a.	**Applicable**	E meter

DSMR-M 4.5.50

Description	Switching modes of breakers and valves must be configurable.						
Rationale	Besides the modes described in DSMR-M 4.5.48, DSMR-M 4.5.49, DSMR-M 4.5.68, DSMR-M 4.5.69, and DSMR-M 4.5.70, the breaker/valve modes must be configurable by the P0 and P3 port. The modes are described in the DLMS Blue Book.						
Fit criterion	Meters must be configurable according to the control modes and control states of DLMS Blue Book, clause 4.5.8.						
History	Jan 2011	**Origin**	TST	**Port**	P0, P3	**Applicable**	E Meter

DSMR-M 4.5.51

Description	In case an alpha-numerical (non-mechanical) display is present the E meter shall display standardised information on the display in case of activating the switch.						
Rationale	For customers and for the back office of grid companies and suppliers, it is useful to have the same kind of text messages on the display of the metering equipment in case of activating the switch or valve. This requirement is only applicable if the meters have an alpha-numerical (non-mechanical) display.						
Fit criterion	In case an alpha-numerical (non-mechanical) display is present the E meter shall display standardised information on the display in case of activating the switch. For E meters (if this functionality is used): • "Knop in" and the register value in case the customer needs to push a button for closing the switch (alternating or simultaneously) • A switching action (connect of disconnect) will take place if the button is pressed for 15 seconds. • "Geopend" and the register value in case of an open switch (alternating or simultaneously)						
History	Oct. 2009	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

5.10.2 Logging information

DSMR-M 4.5.52

Description	The E meter shall record logging information for each (dis)connect.
Rationale	Disconnecting a customer is a drastic measure, especially when the premises that are disconnected are inhabited. For this reason the grid operator wants to keep track of (dis)connections and therefore keeps a log of these actions.

Fit criterion	Besides the generic attributes for logging, at least the following information for (dis)connects shall be recorded: ▪ Position of the breaker after the (dis)connect was applied; ▪ Time stamp at which the (dis)connect has been applied.						
History	Nov. 2007	**Origin**	NTA 8130	**Port**	n.a.	**Applicable**	E meter

DSMR-M 4.5.53

Description	The E meter shall provide logging information for a reasonable amount of (dis)connects.						
Rationale	The GO will retrieve logging information on a periodic basis. During this period the equipment shall be able to store logging information on the (dis)connects that occur.						
Fit criterion	The E meter shall provide logging information for the 10 most recent (dis)connects.						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.3)	**Port**	P3	**Applicable**	E meter

5.10.3 Performance

DSMR-M 4.5.54

Description	The E meter shall (dis)connect the supply of energy soon after the request was received by the metering system.						
Rationale	A (dis)connect must be performed soon after the command.						
Fit criterion	Total handling time after receiving the request shall be less than 30 seconds.						
History	Nov. 2007	**Origin**	TST	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.55

Description	The E meter shall have the logging information on (dis)connection of both E and G available on P3 soon after the request was received by the metering system.						
Rationale	If the information retrieval takes too much time, this will cause delays in the data collection process.						
Fit criterion	Total handling time of retrieving the stored logging information on (dis)connection of both E and G and publish all information on P3 shall be less than 5 seconds.						
History	Nov. 2007	**Origin**	TST	**Port**	P3	**Applicable**	E meter

35. Removed Section 5.11: Use Case 11: Apply treshold (electricity)

This section describes the use case for applying a threshold on the supply of electrical power. It must be possible to set two different threshold values simultaneously, one value for the normal contractual value of the electricity connection, and one value to be used in case a shortage of electricity is anticipated (“Code Red”). The electricity thresholds can be set remotely. The breaker de-activates if the instantaneous power import(+P) is greater than the set threshold for longer than 30 seconds. However, de-activation does not take place as long as there is a net return supply to the network. After the breaker has been switched off due to exceeding the threshold value, the breaker can manually be switched on. The trigger description, block diagram and UML sequence diagram are depicted in Figure 5-11.

Trigger	Description
Deployment of E meter	Threshold level can be used to set the contractual level (maximum contracted power on the connection) in the meter.
Anticipate shortage (Code Red)	For cases where the grid operator suspects a shortage of a commodity he predefines groups for which the maximum consumption can be reduced during the shortage.
Pre-paid credit low	The pre-paid credit on a meter is below a level pre-defined by the supplier. The supplier therefore reduces the instantaneous power import(+P) allowed on the meter.

Figure 5-11a: Apply threshold (electricity) – trigger description

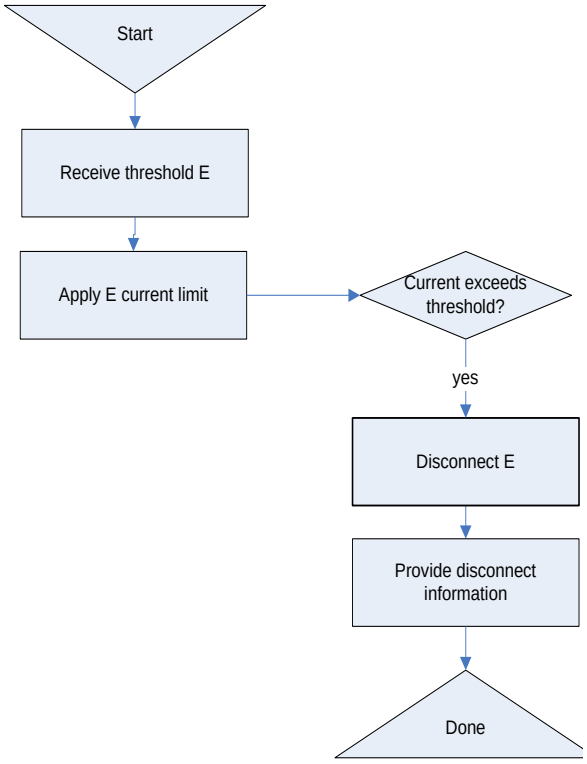


Figure 5-11b: Apply threshold (electricity) – block diagram

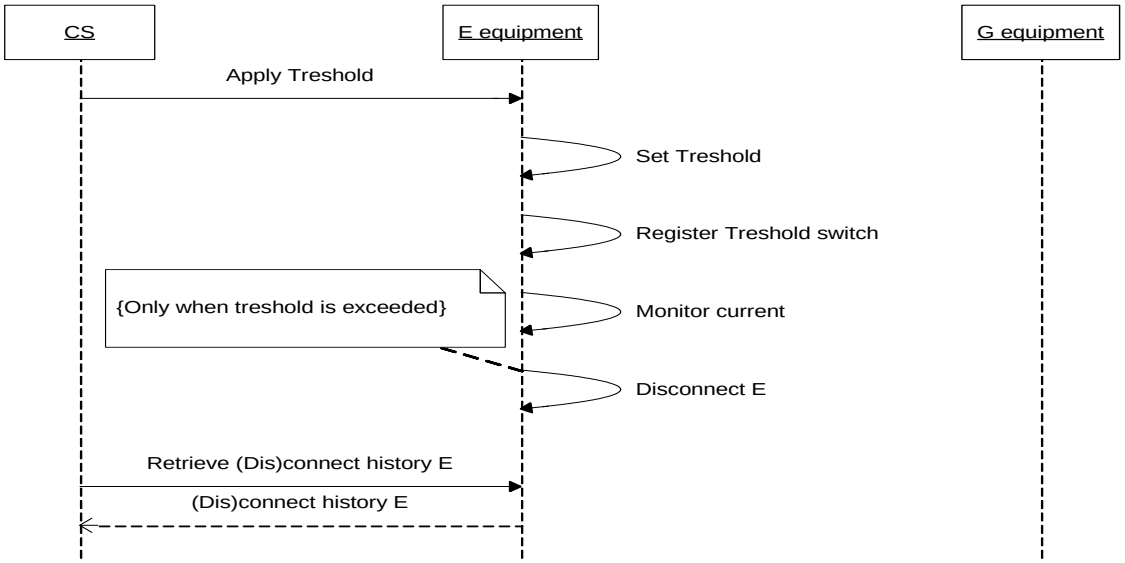


Figure 5-11c: Apply threshold (electricity) – UML sequence diagram

Pre-conditions for Apply Threshold

- No threshold or a different threshold value is applied in the E meter.

Parameters for Apply Threshold

- Command, indicating set or clear;
- Threshold value to be used to set the contractual level in the meter (specified in Watt);
- Threshold value to be used during “Code Red” (specified in Watt);
- Activation date and time (optional).

Post-conditions for Apply Threshold

- The E meter disconnects if the threshold is exceeded;
- Disconnect information is logged and an event is generated (if configured).

Assumptions for Apply Threshold

- Both grid operator (GO) and supply company (SC) can request a threshold value for normal operation. The CS will register these requests and pass through only the smallest value to the E meter.
- It is assumed that groups of meters can be addressed in the software of the CS

5.11.1 Apply threshold electricity

DSMR-M 4.5.56

Description	The E meter shall provide functionality to set the values of the threshold remotely (all phases). It shall be possible to (de)activate the threshold.

Rationale	There are multiple reasons to reduce the active power import on a connection. A supplier can for instance reduce the active power import as the result of too little pre-paid credit. Activating can be done by setting the thresholds to the given values. If no threshold is necessary the values are set to the highest possible values (meaning the breaker will never disconnect on Imax)						
Fit criterion	In case of the set command, the E meter shall accept values for the threshold specified in Watt. For a 3-phase metering installation the threshold represents the sum over all phases. In case of deactivation the threshold is set to 999999.						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.3.1.1.3)	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.57

Description	The electricity meter shall log the event that a threshold is set or cleared.						
Rationale	Setting or clearing the threshold for electricity affects the customer and possibly the supplier. For this reason it is necessary to keep track of the events of setting the threshold. See also §5.3.1.3 of the NTA 8130.						
Fit criterion	The log item for applying a threshold shall, besides the generic attributes for logging, at least contain the following information: ▪ The threshold value that is set (specified in Watt).						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.3.1.3)	**Port**	n.a.	**Applicable**	E meter

DSMR-M 4.5.58

Description	The E meter shall automatically invoke Use case 10: (Dis)connect E' if the power consumption through the meter exceeds the threshold value.						
Rationale	The threshold is used to reduce power consumption. If power consumption exceeds the threshold a disconnect is the result.						
Fit criterion	The electricity meter shall disconnect if the power consumption exceeds the threshold. ▪ Disconnection is executed when the the instantaneous active power exceeds the threshold continuously during a defined period						
History	Nov. 2007	**Origin**	NTA 8130	**Port**	n.a.	**Applicable**	E meter

DSMR-M 4.5.59

Description	The E meter shall provide functionality to let the customer reconnect manually after a disconnect that resulted from exceeding the threshold.						
Rationale	Although the customer can be informed on the threshold, the customer shall not be able to determine under what circumstances he will exceed the threshold. If the threshold is exceeded the customer shall have the ability to reduce power consumption to a value below the threshold and then locally reconnect.						
Fit criterion	The electricity meter has a facility that enables the customer to manually reconnect.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

5.11.2 Activate Code Red

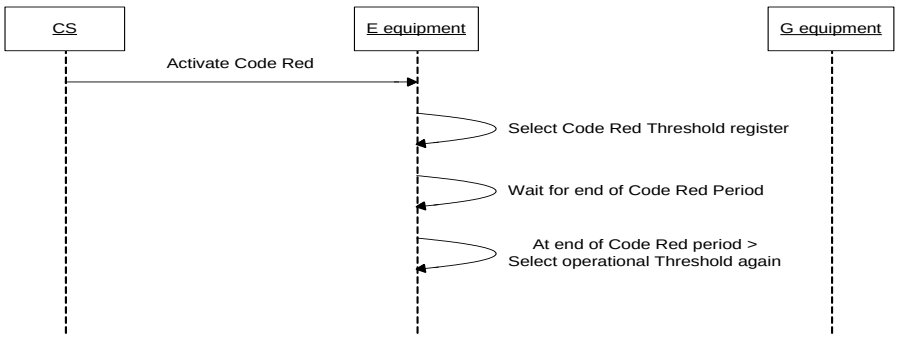


Fig 5-11d Activate Code red – UML sequence Diagram

Pre-conditions for Activate Code red

- Threshold is set by writing a value into the corresponding register.
- Code Red group name has been allocated to the E meter.

Parameters for Activate Code red

- Activation date and time and the date and time of the end of code red.

Post-conditions for Activate Code red

- The E meter uses the Code Red Threshold register in the defined time period, for monitoring the power.
- The E meter uses the normal operational Threshold register outside the defined time period, for monitoring the power.
- The E meter disconnects when the code red threshold is exceeded.
- Disconnect information is logged and an event is generated (if configured).

Assumptions for Activate Code red

- The CS will send a short message that will be displayed on the E meter display to indicate code red and the limit on the power supply.
- It is assumed that groups of meters can be addressed in the software of the CS

5.11.3 Code Red requirements

The CS has the functionality to define groups of E meters for Code Red with the following attributes:

- Unique name for the group,
- Total maximum power for all the E meters belonging to that group,
- List of all the E meter identifications belonging to that group.

When the GO anticipates a shortage of electricity, then groups of E meters are selected for which the Code red threshold will apply. The period for which the Code Red will become active will be determined by GO specific info.

DSMR-M 4.5.60

Description	The E meter shall provide functionality to become part of a Code Red group.						
Rationale	The CS will send Code red activation commands applicable for a certain group. Only E meters belonging to that group will activate the Code red condition.						
Fit criterion	Functionality to become part of a Code Red group is provided.						
History	Sep. 2009	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

DSMR-M 4.5.61

Description	The E meter shall provide functionality to activate Code Red and select the code red threshold register. The command will contain an activation period and a code red group name. After that period the operational threshold register will be selected again. Only the E meters belonging to the Code red Group and with a Code Red Threshold value lower than the Operational Threshold value, will use the Code Red threshold register.						
Rationale	The E meter has 2 threshold registers. In case of a Code Red condition, the Central System will send this Code Red condition to all or a subset of the E meters. The activation time and duration must be part of the Code Red activation command because it can not be guaranteed that an explicit “end of code red” command will be received by all E meters in reasonable time. The activation time and duration of a code red condition can be determined quite well by the SC or GO.						
Fit criterion	The E meter shall switch between threshold registers with a tolerance of 15 seconds.						
History	Sep. 2009	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

DSMR-M 4.5.62

Description	The E meter shall provide functionality to explicitly deactivate Code Red with a command. The command will contain a date and time to indicate when Code Red has to be deactivated. When no date and time is provided, then the deactivation must be done instantly. After deactivate Code Red condition, the operational threshold register is used again. Only E meters belonging to the Code Red Group, will deactivate the Code red Condition.						
Rationale	The explicit method of ending a Code Red condition is used when the CS issued a Code Red activation command that contained an irrelevant time period. Reason could be that the Code Red condition is ended earlier than estimated, or because a mistake was made by the activation.						
Fit criterion	Functionality to explicitly deactivate Code Red with a command is provided.						
History	Sep. 2009	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

5.11.4 Error reporting

DSMR-M 4.5.63

Description	The equipment shall issue a logical error in case the threshold that has to be set is beyond limits (i.e. negative or outside the range of the variable).
Rationale	In the function call to set the threshold, one parameter is given to set the threshold to a certain level. If this level is negative or larger than the maximum capacity a logical error will occur.

Fit criterion	The equipment shall issue a logical error in case the threshold that has to be set is beyond limits (i.e. negative or outside the range of the variable). The logical error issued shall at least contain the generic attributes for errors.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

5.11.5 Performance

DSMR-M 4.5.64

Description	The E meter shall apply the threshold to the supply of electricity within 5 seconds after the request was received.						
Rationale	When a threshold is set due to power shortage, it shall be set as soon as possible.						
Fit criterion	Total handling time after receiving the request shall be less than 5 seconds.						
History	Nov. 2007	**Origin**	TST	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.65

Description	The E meter shall have the logging information on applying a threshold available on P3 soon after the request was received by the metering installation.						
Rationale	If the information retrieval takes too much time, this will cause delays in the data collection process.						
Fit criterion	Total handling time of retrieving the stored logging information on applying a threshold and publish all information on P3 shall be less than 5 seconds.						
History	Nov. 2007	**Origin**	TST	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.66

Description	The E meter shall disconnect the supply of electricity (see use case 10) soon after the threshold is exceeded for more than 30 seconds.						
Rationale	30 seconds is required in NTA 8130, a small delay is needed for switching the breaker.						
Fit criterion	Total handling time after registering the exceed shall be less than 1 s.						
History	Nov. 2007	**Origin**	TST	**Port**	P3	**Applicable**	E meter

DSMR-M 4.5.67

Description	The E meter shall reconnect the supply of electricity (see use case 10) soon after it is manually activated.						
Rationale	The effect of pushing the button shall become clear immediately.						
Fit criterion	Connection shall be in place within 1 s.						
History	Nov. 2007	**Origin**	TST	**Port**	P3	**Applicable**	E meter

36. Removed Section 5.12: Use Case 12: (Dis)connect G

This section describes the use case for connecting and disconnecting the supply of gas. The use case therefore has two types of triggers: one for connecting and one for disconnecting; however, for each type of trigger, there are several motivations. For the gas valve there are three possible positions: on, off or released. The de-activation and release for activation of the valve is done remotely. Actual activation of the connection is done on site

unless remote activation can be realized safely. For the collective activation/de-activation of gas the requirements apply as shown in §5.3.1.2.1 (of NTA 8130), where it must be possible to release or de-activate groups of connections at the same time. The trigger description, block diagram and UML sequence diagram are depicted in Figure 5-12. Note that the list of Figure 5-12a is *not* exhaustive; the mentioned triggers are examples.

Disconnecting

Trigger	Description
Uninhabited	If the premises where the equipment is installed becomes uninhabited, the grid operator can decide to disconnect.
Non-payment	If the supplier has determined that the customer does not pay for delivery, the supplier can decide to disconnect.
Pre-paid credit too low	If the supplier determines that the pre-paid credit for the connection is too low, the supplier can decide to disconnect.
Gas outage detected	A gas outage has been detected and as a safety procedure a (group of) premise(s) is disconnected.
No supplier	If the grid operator determines that there is no supplier for the premises where the equipment is installed, the grid operator can decide to disconnect.

Connecting

Trigger	Description
New inhabitants	If the grid operator determined that the previously uninhabited premises have new inhabitants with a supplier, the grid operator can decide to reconnect.
Bills have been paid	Customers that have paid their bills or increased their prepaid credit are being re-connected.
Pre-paid deposit	If the client has made a deposit for pre-payment the supplier can decide to re-connect the client.
Gas outage resolved	After a gas outage has been resolved, a (group of) premise(s) is reconnected.
New supplier	The new supplier for a connection can issue a reconnect.

Figure 5-12a: (Dis)connect G – trigger description

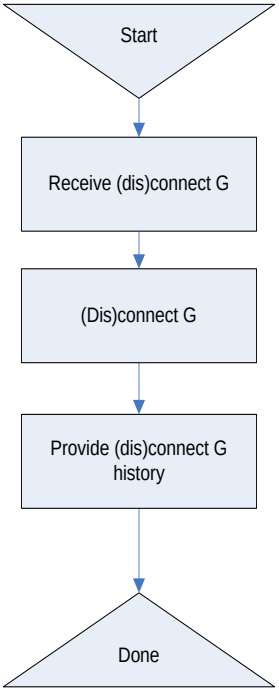


Figure 5-12b: (Dis)connect G – block diagram

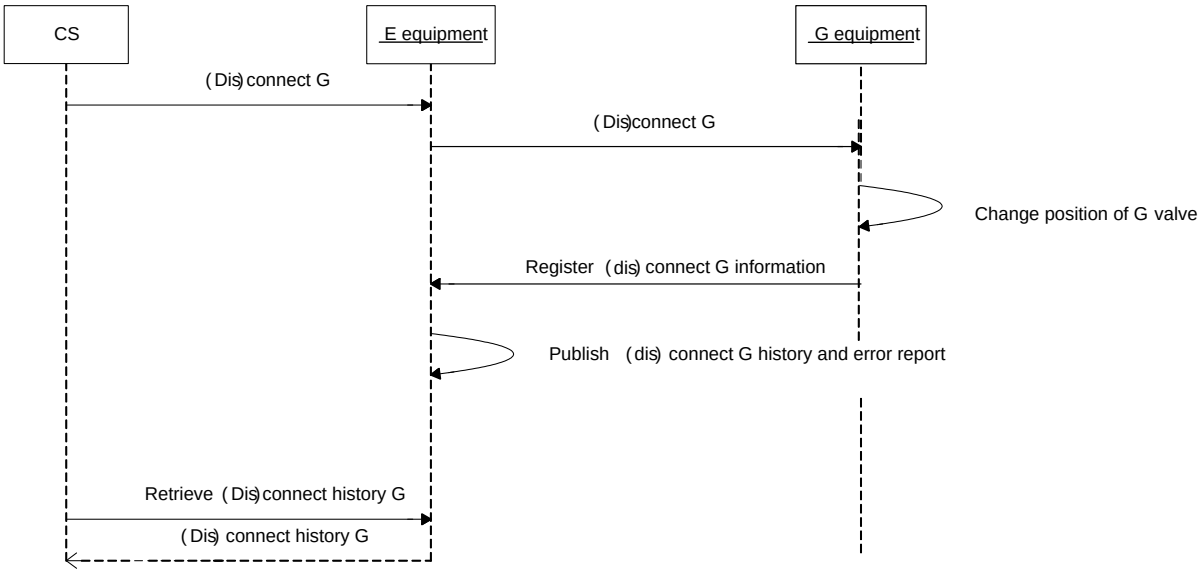


Figure 5-12c: (Dis)connect G – UML sequence diagram

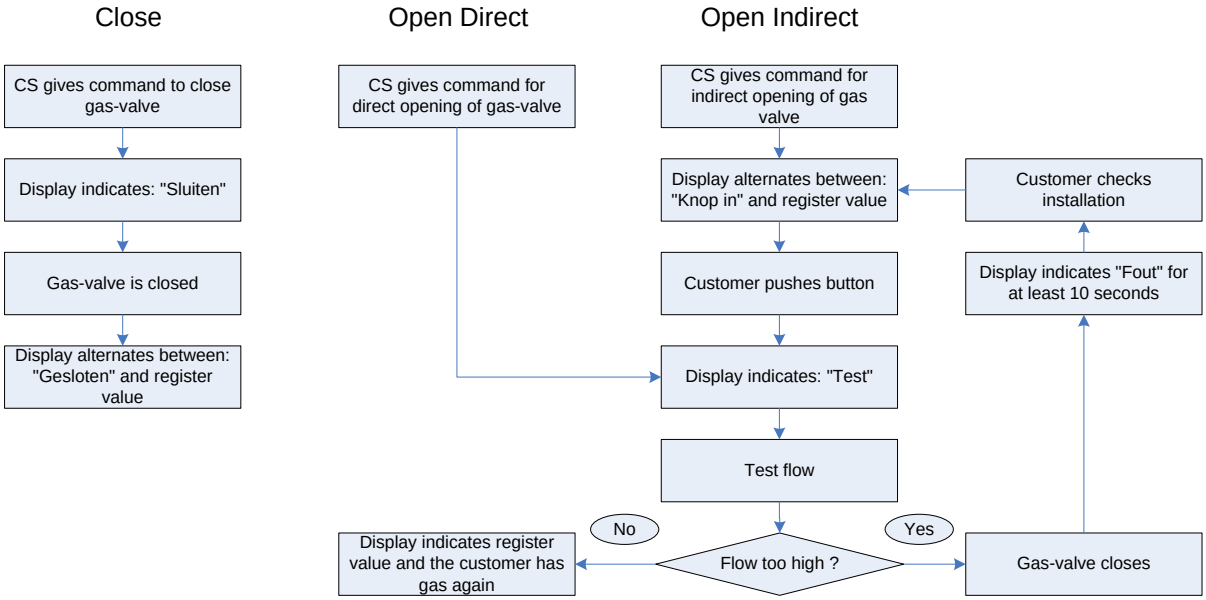


Figure 5-12d: Display messages on G meter display for opening or closing the gas valve – block diagram

Pre-conditions

- The position of the G valve has to be changed.

Parameters

- Connect or disconnect;
- Date and time of connect or disconnect (optional);

Post-conditions

- The position of the G valve has been changed;
- If the (dis)connect has failed, an error is logged in the electricity equipment (i.e. in case the position of the G valve is not as requested).

Assumptions

- It is assumed that groups of meters can be addressed in the software of the CS.

5.12.1 (Dis)connect gas

DSMR-M 4.5.68

Description	The G equipment shall provide functionality to remotely (dis)connect the supply of gas automatically after such a command has been received.
Rationale	The market dynamics require a means to (dis)connect a customer. Market dynamics include: non-payment, change of supplier, removal, etc.

Fit criterion	The customer does not receive any gas after a disconnect. The supply of gas is started after a connect in case the connect can be handled safely.						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.3.1.2.1)	**Port**	P2	**Applicable**	G meter

DSMR-M 4.5.69

Description	The G valve used to disconnect shall not be available for manual operation.						
Rationale	The valve shall not be considered a safety precaution to deactivate the home installation manually. The valve is therefore available for remote disconnecting only.						
Fit criterion	It is not possible to use the G valve to manually de-activate the home installation locally.						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.3)	**Port**	P2	**Applicable**	G meter

DSMR-M 4.5.70

Description	The gas meter shall provide functionality to manually connect to the gas supply if the G meter cannot connect the gas supply automatically in a safe manner.						
Rationale	Any equipment that was turned on when the gas supply was switched off can cause leakage of gas when the gas supply is turned on again. Some G meters are prepared to handle this risk; others are not. In case the G meter cannot handle a safe connect remotely, the G meter shall provide functionality to enforce the connect manually after it is initiated remotely first.						
Fit criterion	The G meter shall provide a facility to let the customer switch-on manually after the valve is released for activation. If a safe connection is supported, this is allowed. In this case the meter checks if there is no use of gas. The limit to be used for G4 and G6 meters is 13 liter/h. A higher flow must be detected within 5 minutes after connection and result in disconnection.						
History	Nov. 2007	**Origin**	NTA 8130 ((§5.3.1.2.1)	**Port**	n.a.	**Applicable**	G meter

DSMR-M 4.5.71

Description	The E meter shall forward a (dis)connect command to the G meter on the designated date at the specified time. If a timestamp (which is an optional parameter) has not been passed as a parameter, the (dis)connect command is to be forwarded as soon as possible.						
Rationale	The market dynamics require a means to (dis)connect a customer. Market dynamics include: non-payment, change of supplier, removal, etc.						
Fit criterion	The command for a (dis)connect shall be forwarded by the E meter to the G meter at the designated date at the specified time, or as soon as possible if the date has not been passed as a parameter.						
History	Nov. 2007	**Origin**	n.a.	**Port**	n.a.	**Applicable**	E meter, G meter

DSMR-M 4.5.72

Description	In case an alpha-numerical (non-mechanical) display is present, the G meter shall display standardised information on the display in case of activating the valve.						
Rationale	For customers and for the back office of grid companies and suppliers, it is useful to have the same kind of text messages on the display of the metering equipment in case of activating the switch or valve. This requirement is only applicable if the meters have an alpha-numerical (non-mechanical) display.						
Fit criterion	In case an alpha-numerical (non-mechanical) display is present, the G meter shall display standardised information on the display in case of activating the valve (See figure 5-12d): “Knop in” and the register value in case the customer needs to push a button for opening the valve (alternating or simultaneously) “Test” - The valve is opening or testing “Fout” – During testing a leakage or consumption has been detected “Sluiten” – The valve is closing “Gesloten” and the register value in case of a closed valve (alternating or simultaneously)						
History	Oct. 2009	**Origin**	TST	**Port**	n.a.	**Applicable**	G meter

5.12.2 Error reporting

DSMR-M 4.5.73

Description	The E meter shall issue a logical error in case the date of the requested connect or (dis)connect cannot be applied at the designated date.						
Rationale	In the function call to connect or disconnect the meter, one parameter is given to identify the date of (dis)connect. If the equipment could not apply the (dis)connect (e.g. because the date was in the past) a logical error is issued. Note that in case of power down, the (dis)connect is applied at power up.						
Fit criterion	The E meter shall issue a logical error in case the date of the requested connect or (dis)connect cannot be applied at the designated date.						
History	Nov. 2007	**Origin**	TST	**Port**	n.a.	**Applicable**	E meter

5.12.3 Performance

DSMR-M 4.5.74

Description	The G meter shall (dis)connect the supply of energy soon after the request was received by the G meter.						
Rationale	A (dis)connect must be performed soon after the command.						
Fit criterion	Total handling time after receiving the request shall be less than 5 minutes.						
History	Nov. 2007	**Origin**	TST	**Port**	P2, P3	**Applicable**	G meter

37. Renumbered use cases 13 thru 18 to 10 thru 15

38. In section 5.10 removed the following sentences:

Examples of messages concern for instance:

- Reason for (dis)connect;
- Reason for applying a threshold E;
- Impending shortage of prepaid credit.

39. In section 6.1.4.2 removed requirement DSMR-M 4.6.27:

Description	The E meter shall provide functionality to set the threshold E before and after the meter is physically installed.						
Rationale	The threshold can be set to a value on behalf of the GO or to a value provided by the SC responsible for the connection that the meter will be installed.						
Fit criterion	The adjusted threshold value will be applied at the time the E meter is deployed.						
History	Nov. 2007	**Origin**	I&M	**Port**	P0, P3	**Applicable**	E meter

40. In section 6.1.4.2 removed requirement DSMR-M 4.6.28:

Description	The E meter shall provide functionality to set the breaker and/or valve position before and after it is physically installed.						
Rationale	The GO needs to set breaker or valve position according to the wishes of the SC. Under some circumstances the GO can modify the position according to its own preferences. Note that it shall be possible to set the valve position for gas in the E meter.						
Fit criterion	The adjusted breaker and/or valve position will be applied at the time the E meter is deployed.						
History	Nov. 2007	**Origin**	I&M	**Port**	P0, P2, P3	**Applicable**	E meter

41. Removed Annex A (Mapping Table DSMR3.0 – DSMR 4.2.2)

3 DSMR V4.2.2 P1 CHANGES

This section lists all the changes incorporated in the Dutch Smart Meter Requirements v4.2.2 Final P1 document. Minor editorial corrections are not listed..

1. Throughout the document removed terms as switch, switching, (dis)connecting, valve etc. and changed sentences accordingly where needed.

2. In section 5.12 removed the following items from table 5-3 :

The actual threshold Electricity in kW	0-0:17.0.0.255	3 Threshold active	71 Limiter Class	F4(1,1), tag 18	kW
Switch position Electricity (in/out/enabled).	0-0:96.3.10.255	3 Control State	70 Disconnector Control	I1, tag 22	
Device-Type	0-n:24.1.0.255	9 Device type	72 M-Bus client	F3(0,0), tag 17	
Valve position Gas (on/off/released). (See Note 3)	0-n:24.4.0.255	3 Control state	70 Disconnect Control	I1, tag 22	
Valve position (on/off/released). (See Note 3)	0-n:24.4.0.255	3 Control state	70 Disconnect Control	I1, tag 22	
Valve position (on/off/released). (See Note 3)	0-n:24.4.0.255	3 Control state	70 Disconnect Control	I1, tag 22	
Valve/Switch position (on/off/released). (See Note 3)	0-n:24.4.0.255	3 Control state	70 Disconnect Control	I1, tag 22	

Please note: the Device-Type was removed here because it had a double entry in the table.

3. In section 5.12 removed note 3:
   Note 3: Valve position only applicable when present.

4. In section 5.13 removed the following item:
   - Limiter value is 16.1 kW

5. From the example telegram deleted the following lines :

```
0-0:17.0.0(016.1*kW)
0-0:96.3.10(1)
0-1:24.4.0(1)
```

6. Recalculated the checksum of the example telegram:

```
!CE7C
```

7. In section 6.1 removed the following items from the table:

The actual threshold Electricity in kW	0-0:17.0.0.255	Use case 5: Provide equipment status to P1
Switch position Electricity (in/out/enabled).	0-0:96.3.10.255	Use case 5: Provide equipment status to P1

8. From section 6.2 deleted the following part:
   01. This means that the electricity is disconnected by the grid operator. Another example of a standard message code is

9. In section 6.3 removed the following item from the table:

Valve position gas (on/off/released). (see note 1)	0-n:24.4.0.255	Use case 5: Provide equipment status to P1

10. In section 6.3 removed note 1:
    Note 1: Valve position only applicable when present.

11. In section 6.4 removed the following item from the table:

Valve position Thermal (on/off/released). (See note 1)	0-n:24.4.0.255	Use case 5: Provide equipment status to P1

12. In section 6.4 removed note 1:
    Note 1: Valve position only applicable when present.

13. In section 6.5 removed the following item from the table:

Valve position Water (on/off/released). (See note 1)	0-n:24.4.0.255	Use case 5: Provide equipment status to P1

14. In section 6.5 removed note 1:
    Note 1: Valve position only applicable when present.

15. In section 6.6 removed the following item from the table:

If applicable, Valve/Switch position (on/off/released). (See note 1)	0-n:24.4.0.255	Use case 5: Provide equipment status to P1

16. In section 6.6 removed note 1:

    Note 1: Valve position only applicable when present.

4 DSMR V4.2.2 P2 CHANGES

This section lists all the changes incorporated in the Dutch Smart Meter Requirements v4.2.2 Final P2 document. Minor editorial corrections are not listed.

1. Throughout the document removed terms as switch, switching, (dis)connecting, valve etc. and changed sentences accordingly where needed.

2. Throughout the document change the example value for DSMR version to 4.2.

3. Removed section 6.2.2 Valve Control Command:
   If the M-Bus device has a controllable valve then the Master (E-Meter) can send valve control commands.

Field	Hex	Remark
DIF	01h	1 digit binary
VIF	FDh	Extension
VIFE	1Fh	Remote control
Valve Command	XXh	02h: valve released, not open 01h: valve opened, 00h: valve closed

   Output to the valve will be according to the command. If the valve status is not equal to the last received valve command, then the valve alarm bit (6.3.3) is set. This command can only be send encrypted and when the User key is set (equivalent to the User key set to a non-zero value).

   For wireless communication: When the actual status of the valve changes, the M-Bus device shall report the new status immediately. It will use the sequence described in paragraph 4.4. The payload in this message will be the standard read-out list.

4. In section 6.2.4 (now 6.2.3) updated the table:

Bit	Meaning with Bit set	Significance with Bit not set
0,1	Application errors, see EN 13757-3	Application errors, see EN 13757-3
2	Power low (Battery replacement expected)	Not power low
3	Permanent error	No permanent error
4	Temporary error	No temporary error
5	Clock Synchronisation error: more than 60 seconds deviation	No significant clock deviation.
6	Fraud attempt registered	No fraud attempt registered
7	Reserved for backwards compatibility – value = 0~~Valve alarm~~	Reserved for backwards compatibility – value = 0~~No valve alarm~~

5. In section 6.2.4 (now 6.2.3) updated the sentence:
   There is a distinction between permanent errors (battery error and permanent error ~~and valve error~~) and non-permanent errors (all other errors).

6. In section 6.3 deleted the following part:
   - Valve status (0) if this is in the configuration data.

   Valve devices (device type =x21) will sent gas valve specific data only (0).

7. In section 6.3.3 updated the table:

Bit	Meaning with Bit set	Significance with Bit not set
0,1	Application errors, see EN 13757-3	Application errors, see EN 13757-3
2	Power low (Battery replacement expected)	Not power low
3	Permanent error	No permanent error
4	Temporary error	No temporary error
5	Clock Synchronisation error: more than 60 seconds deviation	No significant clock deviation.
6	Fraud attempt registered	No fraud attempt registered
7	Reserved for backwards compatibility – value = 0~~Valve alarm~~	Reserved for backwards compatibility – value = 0~~No valve alarm~~

8. In section 6.3.3 updated the sentence:
   There is a distinction between permanent errors (battery error and permanent error ~~and valve error~~) and non-permanent errors (all other errors).

9. Removed section 6.4.5 Gas valve specific data blocks:
   Valve status

Field	Hex	Remark
DIF	89h	2 digit BCD
DIFE	40h	Valve (new definition)
VIF	FDh	Valve (new definition)
VIFE	1Ah	Digital status
Mask	XXh	02: valve released, not open 01: valve opened, 00: valve closed

10. In section 7.2 updated the following part:
    A power outage on the M-Bus wired connection could occur. M-Bus devices should always measure and register the usage during a power outage. ~~The status of a valve may not be changed caused by the power outage~~. All configuration data (including M-Bus device addresses and User keys) and all process data ~~(including any valve commands)~~ are to be stored during long power outages.

11. Added Section 9, Backwards Compatibility

9.1 DSMR4.2 E meter with DSMR4.0 and DSMR 4.2.1 G meter

The E-Meter behavior:

- E-Meter will not send any valve commands (not part of DSMR 4.2.2 specification).
- E-Meter accepts status information in P2 telegrams as specified in DSMR 4.0 about valve status. The information is discarded in the E-Meter:

  Gas valve specific data blocks

  Valve status

Field	Hex	Remark
DIF	89h	2 digit BCD
DIFE	40h	Valve (new definition)
VIF	FDh	Valve (new definition)
VIFE	1Ah	Digital status
Mask	XXh	02: valve released, not open 01: valve opened, 00: valve closed

- E-Meter will handle the valve capability information as specified in the Meter Configuration Data (see section 6.4.8 and P2-P3 mapping)
- A possible valve alarm (bit 7 in status field; see section 6.3.3 of this specification and the definition in DSMR 4.0) will be ignored .

The G-Meter behavior:

The DSMR4.2.2 E-meter will not send valve commands therefore the G-Meter will not receive any valve commands.; it just behaves according DSMR 4.0 specification

9.2 DSMR4.0 E meter with DSMR4.2.2 G meter

The E-Meter behavior:

- The E-Meter receives the valve capabilities of the G-meter in the Meter Configuration Data (see section 6.4.8 and P2-P3 mapping). The capabilities will indicate that the G-Meter does not have a valve.

The G-Meter behavior:

- G-Meter does not have a valve and indicates that in the Meter Configuration Data (see section 6.4.8).

12. In Appendix A, P2-P3 mapping table removed the following lines:

01h		01h	1Fh	Valve Control Command	**6.2.2**	**0-x:24.4.0.255** Output state	
				Disconnectable flag			Set during operation at any time
89h	40h	FDh	1Ah	Digital status valve	**6.4.3**		

13. In Appendix B removed Example B1.1 – Close valve example

Encryption Method Code = 0Fh

Field	Hex		Remark
	clear	encrypted	
Start Character	68h		Start byte long telegram
L	1Ah		Length
L	1Ah		Length
Start Character	68h		Start byte long telegram
C	53h		FCB=0
A	01h		Primary Address
CI	5Ah		Data send (master to slave)
Access No	01h		
Status	00h		
Configuration Word	10h	10h	AES 128, Mode 15
	0Fh	0Fh	1 block
	2Fh		AES verification
	2Fh		AES verification
DIF	01h		8 bit Integer / Binary
VIF	FDh		Extension
VIFE	1Fh		Remote Control
Valve Command	00h		Command = close
Filler	2Fh		Idle Filler
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
DIF	04h		4 Bytes integer
VIF	FDh		a VIFE follows
VIFE	08h		unique telegram identification (Frame counter)
	XXh		
	XXh		
	XXh		
	XXh		

Field	Hex		Remark
	clear	encrypted	
CS			Checksum
Stop Character	16h		Always 16

14. In Appendix B removed Example B1.2 – Open valve example

Encryption Method Code = 0Fh

Field	Hex		Remark
	clear	encrypted	
Start Character	68h		Start byte long telegram
L	1Ah		Length
L	1Ah		Length
Start Character	68h		Start byte long telegram
C	53h		FCB=0
A	01h		Primary Address
CI	5Ah		Data send (master to slave)
Access No	01h		
Status	00h		
Configuration	10h	10h	AES 128, Mode 15
	0Fh	0Fh	1 block
	2Fh		AES verfication
	2Fh		AES verfication
DIF	01h		8 bit Integer / Binary
VIF	FDh		Extension
VIFE	1Fh		Remote Control
Valve Command	01h		Command = open
Filler	2Fh		Idle Filler
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
	2Fh		
DIF	04h		4 Bytes integer
VIF	FDh		a VIFE follows

Field	Hex		Remark
	clear	encrypted	
VIFE	08h		unique telegram identification (Frame counter)
	XXh		
	XXh		
	XXh		
	XXh		
CS			Checksum
Stop Character	16h		Always 16

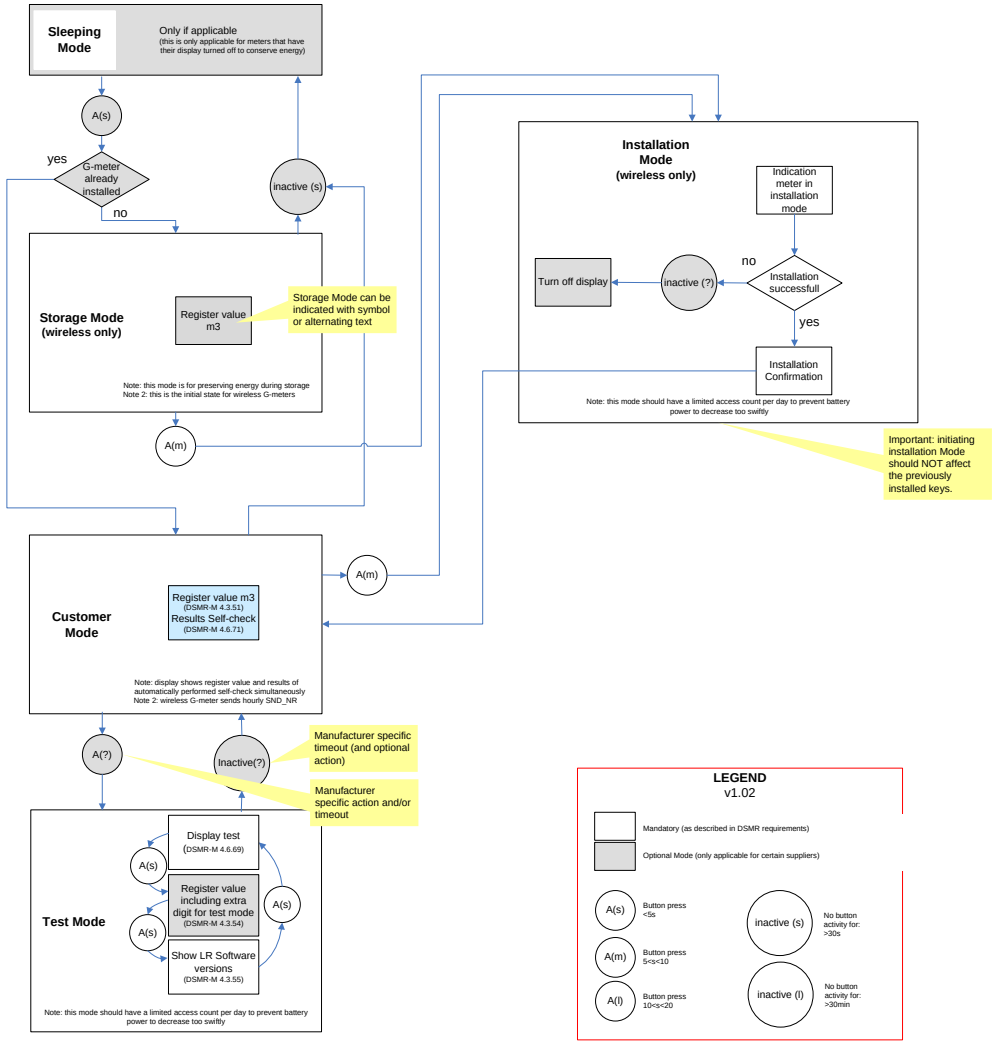
15. In Appendix B updated Example B1.5 (Now B1.3) – RSP_UD telegram of a gasmeter
This example shows a RSP_UD telegram (before encryption) of a meter comprising of the following properties:
~~- with valve~~
- temperature converted volume
- meter type G4 => volume multiplier = 0,001m³

Field	Hex		Remark
	clear	encrypted	
Start Character	68		
L	3F ~~4F~~		
L	3F ~~4F~~		
Start Character	68		
C	08		RSP_UP
A	01		
CI	72		
Identification Number	89		ID: ‘23456789’
	67		
	45		
	23		
Manufacturer Identification	B4		’NET’
	38		
Version Ident.	42 ~~40~~		DSMR compliancy level, i.e. 4.2~~0~~
Device type	03		Medium, eg. gas
Access No	F6		
Status	00		Not used
Configuration Word	00	30 ~~40~~	48 ~~64~~ encrypted bytes.
	00	0F	Mode 15, AES 128 bit encryption
Encryption Verification	2F	F1	2 Idle Filler bytes
	2F	80	

Field	Hex		Remark
	clear	encrypted	
DIF	01	C5	8 bits
VIF	FD	3E	Use VIFE
VIFE	17	07	Error flags
Status byte	00	68	Encrypted Status
DIF	0D	C7	variable length
VIF	78	6A	Serial number
LVAR	11	E6	Serial number length 17 Field
Equipment Identifier	39	E2	'XXXXX110123456789'
	38	4A	
	37	98	
	36	BD	
	35	D5	
	34	94	
	33	7F	
	32	62	
	31	27	
	30	32	
	31	BF	
	31	63	
	58	72	
	58	AA	
	58	2A	
	58	A9	
	58	AF	
DIF	46	6D	6 bytes integer, storage bit set
VIF	6D	0F	Date and Time data type I
	00	0C	
	00	71	
	0B	FB	
	32	59	
	16	7F ~~5D~~	Date/Time (yy.mm.dd
Time stamp	00	FC ~~FE~~	hh:mm:ss) = 09.06.18 11:00:00
DIF	4C	62 ~~CC~~	8 digit BCD storage 1
VIF	13	05 ~~67~~	Volume (0,001 m³)
	91	A2 ~~2F~~	
	03	5F ~~D3~~	
Meter value	00	50 ~~51~~	
(converted volume)	00	84 ~~CC~~	'00000391'

Field	Hex		Remark
	clear	encrypted	
~~DIF~~	~~89~~	~~00~~	~~2 digit binary~~
~~DIFE~~	~~40~~	~~A0~~	~~Subunit~~
~~VIF~~	~~FD~~	~~49~~	~~Valve (new definition)~~
~~VIFE~~	~~1A~~	~~8D~~	~~Digital Status~~
~~Valve Status~~	~~01~~	~~A5~~	~~Valve opened~~
DIF	01	27 ~~FC~~	1 digit binary
VIF	FD	87 ~~51~~	Extension
VIFE	67	A6 ~~15~~	Special Supplier Information
Meter Configuration	05 ~~07~~	F0 ~~58~~	- clock, ~~valve,~~ temp corrected
Idle Filler	2F	C2 ~~42~~	Idle Filler
	2F	9D ~~C7~~	
	~~2F~~	~~76~~	
	~~2F~~	~~F5~~	
	~~2F~~	~~9B~~	
	~~2F~~	~~31~~	
	~~2F~~	~~9B~~	
	~~2F~~	~~60~~	
	~~2F~~	~~08~~	
	~~2F~~	~~62~~	
	~~2F~~	~~18~~	
	~~2F~~	~~3F~~	
	~~2F~~	~~69~~	
Encryption Verification	2F	50 ~~1A~~	2 Idle Filler bytes
	2F	7B ~~68~~	
DIF	04		4 Bytes integer (unencrypted)
VIF	FD		a VIFE follows
VIFE	08		Frame counter
	01		E.g start with 00 00 00 01 (LSB first)
	00		
	00		
	00		
CS	53 ~~39~~	93 ~~E5~~	Checksum (unencrypted)
Stop Character	16		

16. Updated Appendix C – One button process:



5 DSMR V4.2.2 P3 CHANGES

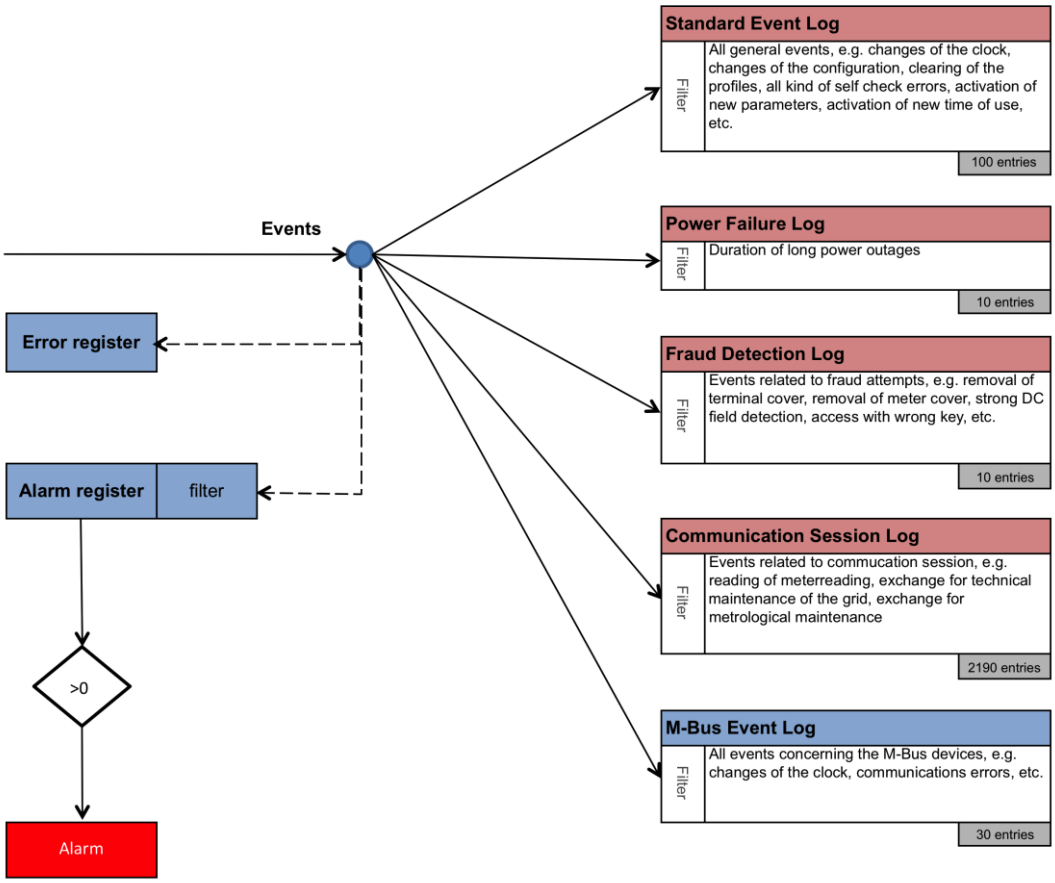
This section lists all the changes incorporated in the Dutch Smart Meter Requirements v4.2.2 Final P3 document. Minor editorial corrections are not listed.

1. Throughout the document removed terms as switch, switching, (dis)connecting, valve etc. and changed sentences accordingly where needed.

2. In section 1.3 removed the following reference:

18	Cosem security	WG04 interoperability & Communications (Milan Kozole); December 2007

3. In section 4.2 updated figure events and alarms :



4. In section 4.2.1 removed the following colums from the table:
   - Disconnector Control Log
   - M-Bus Control Log 1
   - M-Bus Control Log 2

- M-Bus Control Log 3
- M-bus Control Log 4

5. In section 4.2.1 updated the following events:

Number	Name	Description	Standard Event log	Fraud Detection Log	Disconnector Control Log	Communication Session Log	M-Bus Event Log	M-Bus Control Log 1	M-Bus Control Log 2	M-Bus Control Log 3	M-Bus Control Log 4
60	Reserved for backwards compatibilityManual disconnection	~~Indicates that the disconnector has been manually disconnected.~~			~~X~~						
61	Reserved for backwards compatibility~~Manual connection~~	~~Indicates that the disconnector has been manually connected.~~			~~X~~						
62	Reserved for backwards compatibility~~Remote disconnection~~	~~Indicates that the disconnector has been remotely disconnected.~~			~~X~~						
63	Reserved for backwards compatibility~~Remote connection~~	~~Indicates that the disconnector has been remotely connected.~~			~~X~~						
64	Reserved for backwards compatibility~~Local disconnection~~	~~Indicates that the disconnector has been locally disconnected (i.e. via the limiter).~~			~~X~~						
65	Reserved for backwards compatibility~~Limiter threshold exceeded~~	~~Indicates that the limiter threshold has been exceeded.~~			~~X~~						
66	Reserved for backwards compatibility~~Limiter threshold ok~~	~~Indicates that the monitored value of the limiter dropped below the threshold.~~			~~X~~						
67	Reserved for backwards compatibility~~Limiter threshold changed~~	~~Indicates that the limiter threshold has been changed~~			~~X~~						
160	Reserved for backwards compatibility~~Manual disconnection M-Bus channel 1~~	~~Indicates that the disconnector has been manually disconnected.~~						~~X~~			
161	Reserved for backwards compatibility~~Manual connection M-Bus channel 1~~	~~Indicates that the disconnector has been manually connected.~~						~~X~~			
162	Reserved for backwards compatibility~~Remote disconnection M-Bus channel 1~~	~~Indicates that the disconnector has been remotely disconnected.~~						~~X~~			

163	Reserved for backwards compatibilityRemote connection M-Bus channel 1	Indicates that the disconnector has been remotely connected.						x			
164	Reserved for backwards compatibilityValve alarm M-Bus channel 1	Indicates that a valve alarm has been registered.						x			
170	Reserved for backwards compatibilityManual disconnection M-Bus channel 2	Indicates that the disconnector has been manually disconnected.							x		
171	Reserved for backwards compatibilityManual connection M-Bus channel 2	Indicates that the disconnector has been manually connected.							x		
172	Reserved for backwards compatibilityRemote disconnection M-Bus channel 2	Indicates that the disconnector has been remotely disconnected.							x		
173	Reserved for backwards compatibilityRemote connection M-Bus channel 2	Indicates that the disconnector has been remotely connected.							x		
174	Reserved for backwards compatibilityValve alarm M-Bus channel 2	Indicates that a valve alarm has been registered.							x		
180	Reserved for backwards compatibilityManual disconnection M-Bus channel 3	Indicates that the disconnector has been manually disconnected.								x	
181	Reserved for backwards compatibilityManual connection M-Bus channel 3	Indicates that the disconnector has been manually connected.								x	
182	Reserved for backwards compatibilityRemote disconnection M-Bus channel 3	Indicates that the disconnector has been remotely disconnected.								x	
183	Reserved for backwards compatibilityRemote connection M-Bus channel 3	Indicates that the disconnector has been remotely connected.								x	
184	Reserved for backwards compatibilityValve alarm M-Bus channel 3	Indicates that a valve alarm has been registered.								x	
190	Reserved for backwards compatibilityManual disconnection M-Bus channel 4	Indicates that the disconnector has been manually disconnected.									x

191	Reserved for backwards compatibilityManual connection M-Bus channel 4	Indicates that the disconnector has been manually connected.									X
192	Reserved for backwards compatibilityRemote disconnection M-Bus channel 4	Indicates that the disconnector has been remotely disconnected.									X
193	Reserved for backwards compatibilityRemote connection M-Bus channel 4	Indicates that the disconnector has been remotely connected.									X
194	Reserved for backwards compatibilityValve alarm M-Bus channel 4	Indicates that a valve alarm has been registered.									X

6. In section 4.2.1 removed the following OBIS-codes of logs
   0-0:96.11.2.255 Disconnector control Log
   0-1:96.11.4.255 M-Bus control log 1
   0-2:96.11.4.255 M-Bus control log 2
   0-3:96.11.4.255 M-Bus control log 3
   0-4:96.11.4.255 M-Bus control log 4

7. In section 4.2.2 updated the following sentence:
   The E-meter features 4 different event logs as described below. Additionally there is one event log for all M-Bus devices ~~as well as one control log per M-Bus channel~~ available.

8. In section 4.2.2 deleted the following descriptions of logs:
   Disconnector Control Log [0-0:99.98.2.255] (paragraph 5.12)
   Contains all events related to the disconnector, e.g. connect, disconnect, changing of the disconnector threshold.
   Structure: Timestamp – Event Code – Currently active disconnector threshold
   Size: 10 entries

   M-Bus Control Logs (0-x:24.5.0.255)(paragraph 7.6)
   Contains all events related to an M-Bus disconnector, e.g. a gas valve (open valve, close valve).
   Structure: Timestamp – Event Code
   Size: 10 entries

9. Removed section 5.11 – Disconnector (Control and Log, Scheduler) E-meter:

Disconnect control (Class ID: 70) **Controls the connection and disconnection of the premises of the consumer**			**Available in:** **SP, PP**	**P**	**M**	**Pr**
1	Logical name	Octet-string	**0-0:96.3.10.255**		R	
2	output_state	boolean			R	
3	control_state	enum			R	
4	control_mode	enum			RW	
	Specific methods	***m/o***				
1	remote_disconnect[5]	m	Data::=integer (0)		X	
2	remote_connect[6]	m	Data::=integer (0)		X	

[5] If a “remote_disconnect” is received and the status is already disconnected, error “other reason” has to be returned; If a “remote_connect” is received and the status is already connected, also error “other reason” has to be returned.

Control log (Class ID:7) **Changes of the states related to the disconnect control are recorded (changing threshold, connect, disconnect)**			**Available in:** **SP, PP**	P	M	Pr
1	logical_name	octet-string	**0-0:99.98.2.255**		R	
2	buffer	array			R	
3	capture_objects	array	{8, 0-0:1.0.0.255,2,0}, clock; {1, 0-0:96.11.2.255,2,0}, control event code {71, 1-0:17.0.0.255,3,0}, limiter threshold Event codes must be defined in chapter 4.2.1		R	
4	capture_period	double-long-unsigned	Value = 0, asynchronously		R	
5	sort_method	enum	Value = 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	10		R	
	Specific methods	***m/o***				
1	reset ()	m			X	
2	capture ()	m				
3	Reserved from previous versions					
4	Reserved from previous versions					

Disconnect Control Scheduler (Class ID: 22)			**Available in:** **SP, PP**	**P**	**M**	**Pr**
1	Logical name	Octet-string	**0-0:15.0.1.255**		R	
2	executed_script	script	disconnect (1) or connect (2) script of disconnector script table {9, 0-0:10.0.106.255}		RW	
3	type	enum	Value = 1, fixed time		R	
4	execution_time	array	Time; date. Dedicated time point for connection or disconnection. No wildcards in date allowed		RW	
	Specific methods	***m/o***				

Disconnector Script Table (Class ID: 9)			Available in: SP, PP	P	M	Pr
1	Logical name	Octet-string	**0-0:10.0.106.255**		R	
2	Scripts	Array[2]	Disconnect script of the disconnector object {70, 0-0:96.3.10.255};1 Connect script of the disconnector object {70, 0-0:96.3.10.255};2		R	
	Specific methods	***m/o***				
	execute(data)	m			X	

Note: The disconnect control object does not feature a memory, i.e. any commands are executed immediately. Any inconsistencies shall be solved in the CS.

10. Removed section 5.12 – Limiter

Limiter (Class ID: 71) Handles the normal monitoring as well as the emergency settings (code red)			Available in: SP, PP	P	M	Pr
1	Logical name	Octet-string	**0-0:17.0.0.255**		R	
2	monitored_value	value_definition	{3,1-0:1.7.0.255,2} instantaneous active power delivered +P		R	
3	threshold_active	double_long_unsigned			R	
4	threshold_normal	double_long_unsigned			RW	
5	treshold_emergency	double_long_unsigned			RW	
6	min_over_threshold_duration	double_long_unsigned			RW	
7	min_under_threshold_duration	double_long_unsigned			RW	
8	emergency_profile	emergency_profile_type			RW	
9	emergency_profile_group_id	Array of long-unsigned			RW	
10	emergency_profile_active	boolean			R	
11	actions	action_set			RW	
	Specific methods	***m/o***				

11. In section 6.4. corrected the data type for attribute 2 of OBIS-code 1-0:2.7.0.255

Instantaneous active power (-P) (Class ID: 3)			**Available in:** **SP, PP**	**P**	**M**	**Pr**
1	Logical name	Octet-string	**1-0:2.7.0.255**		R	
2	Value	double long-unsigned			R	
3	Scaler_unit	scal_unit_type	Value = {0,27}, scaler=0, unit=W		R	
	Specific methods	***m/o***				
	reset (data)	o				

12. In section 6.4. corrected the data type for attribute 2 of OBIS-code 1-0:16.7.0.255

Instantaneous active power (abs(QI+QIV)-abs(QII+QIII)) (Class ID: 3)			**Available in:** **SP, PP**	**P**	**M**	**Pr**
1	Logical name	Octet-string	**1-0:16.7.0.255**		R	
2	Value	double-long			R	
3	Scaler_unit	scal_unit_type	Value = {0,27}, scaler=0, unit=W		R	
	Specific methods	***m/o***				
	reset (data)	o				

13. In section 7.3.2 updated the description for M-Bus-Device configuration
    - Meter Configuration ~~(including "valve device present" (VIF/VIFE = FDh 67h)~~

14. Removed Section 7.6 – Disconnector (Control and Log) M-bus

M-Bus Master Disconnect Control (Class ID: 70) **Controls the opening and closing of an M-Bus disconnector (e.g. gas valve) (4 instances, one per channel)**			**Available in:** **SP, PP**	**P**	**M**	**Pr**
1	Logical name	Octet-string	**0-x:24.4.0.255** (x=channel number (1..4))		R	
2	output_state	boolean			R	
3	control_state	enum			R	
4	control_mode	enum			RW	
	Specific methods	***m/o***				
1	remote_disconnect[6]	m	Data::=integer (0)		X	
2	remote_connect[12]	m	Data::=integer (0)		X	

[6] In case a M-Bus device has no disconnector (e.g. valve), error "other reason" has to be returned. If a "remote_disconnect" is received and the status is already disconnected, error "other reason" has to be returned; If a "remote_connect" is received and the status is already connected, also error "other reason" has to be returned.

M-Bus Master Control log (Class ID: 7) **Changes of the states related to the disconnect control are recorded (open, close) (4 instances, one per channel)**			**Available in:** **SP, PP**	**P**	**M**	**Pr**
1	Logical name	Octet-string	**0-x:24.5.0.255** (x=channel number (1..4))		R	
2	buffer	Array			R	
3	capture_objects	Array	{8,0-0:1.0.0.255,2,0}; {1,0-x: 96.11.4.255,2,0} (x=channel number (1..4)) (=clock; control event code) Event codes must be defined (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	10		R	
	Specific methods	***m/o***				
1	reset ()	m			X	
2	capture ()	m				
3	Reserved from previous versions					
4	Reserved from previous versions					

Disconnect Control Scheduler (Class ID: 22)			**Available in:** **SP, PP**	**P**	**M**	**Pr**
1	Logical name	Octet-string	**0-1:15.0.1.255**		R	
2	executed_script	script	connect or disconnect script of disconnector script table {9, 0-1:10.0.106.255};1..8		RW	
3	type	enum	Value = 1, fixed time		R	
4	execution_time	array	Time; date. Dedicated time point for connection or disconnection. No wildcards in date allowed		RW	
	Specific methods	***m/o***				

Disconnector Script Table (Class ID: 9)			Available in: SP, PP	P	M	Pr
1	Logical name	Octet-string	**0-1:10.0.106.255**		R	
2	Scripts	Array[8]	Connect script of the disconnector object {70,0-x:24.4.0.255};2 Disconnect script of the disconnector object {71,0-x:24.4.0.255};1		R	
	Specific methods	***m/o***				
1	execute(data)	m			X	

Note: The disconnect control object does not feature a memory, i.e. any commands are executed immediately. Any inconsistencies shall be solved in the CS.

15. In Annex A removed the following lines:

E meter:

Actual threshold Electricity	0-0:17.0.0.255

P1:

Actual threshold Electricity	0-0:17.0.0.255

P3:

Actual threshold Electricity	0-0:17.0.0.255

16. In Annex B removed the following lines:

0-0:17.0.0.255	Active Threshold
0-0:96.3.10.255	Switch position electricity
0-1:24.4.0.255	M-Bus Client Channel 1 Valve/Switch position (see note 3)
0-2:24.4.0.255	M-Bus Client Channel 2 Valve/Switch position (see note 3)
0-3:24.4.0.255	M-Bus Client Channel 3 Valve/Switch position (see note 3)
0-4:24.4.0.255	M-Bus Client Channel 4 Valve/Switch position (see note 3)

17. In Annex B removed footnote 3 and 4:

3) Only if device is installed and the device is equipped with a valve or switch

4) Only if limiter is activated (threshold unequal to 999999W)

6 DSMR V4.2.2 GPRS CHANGES

This section lists all the changes incorporated in the Dutch Smart Meter Requirements v4.2.2 Final GPRS document.

1. Removed Annex A.