ADR Project. DLMS_COSEM Profile

Rev.1.2

Revision History

Version	Date	Description
1.0	14.05.2025	First document revision
1.1	15.12.2025	Changed comments for TestMode object; Changed description for TransportationMode object; Minor changes have been made to the titles of documents related to the description of LoRaWAN and wM-Bus.
1.2	10.04.2026	NB-IoT objects were added (section 4.3). Added Appendix C (Compact Frame Descriptions) and D (DataNotification Description). Added PreEstablished related objects

Table of Contents

1. DLMS/COSEM Application Association

1.1. Physical and Logical Devices

In DLMS/COSEM metering equipment normally operated as a COSEM server is modeled in physical and logical devices. In general, actual (physical) device can contain multiple logical devices. Water meter contains only one logical device: the management logical device (L_SAP = 1).

1.2. The Invoke_Id and Priority Byte

Is handled according to DLMS Blue Book Ed.13.
When the Block Transfer is used to carry long data that do not fit into one APDU, the client must set same Invoke_Id value for all blocks.
Bit 6 (service_class) must be set by the client in order to get an answer from the meter. The meter only answers if Bit 6 is set in the request.
In the response sent from the meter Bit 6 (service _class) and Bit 7 (Priority) are irrelevant for the client, the meter must return the Invoke-Id and Priority byte as received from the client.

1.3. Clients

The following COSEM Clients are permitted by the COSEM server:

- Public Client (L_SAP: 16),
- Reading Client (L_SAP: 2),
- Management Client (L_SAP: 1),
- Firmware Update Client (L_SAP: 3),
- Pre-Established Client (L_SAP: 102).

Client	Client L_SAP	Use Cases	Behavior	Services supported by a Server
Public client	16	• Reading basic device configuration information (SAPs, COSEM logical device name, association, serial numbers, etc.).	• Accessible via BLE, NFC, NB-IoT • No security. • Get service only to a limited set of attributes. • Must be established by the client using the AARQ service. • Closing BLE: on explicit closure, on timeout or on release request.	• Block-transfer-with-get. • Get. • Multiple-references. • Selective access.
Reading Client	2	• Meter parameters reading. • Meter accumulated register reading.	• Accessible via BLE, NFC, NB-IoT. • Must be established by the client using the AARQ service with LLS or HLS (mechanism_id(5)). • Supports encryption and authentication. • Closing BLE: on explicit closure, on timeout or on release request.	• Block-transfer-with-get. • Get. • Multiple-references. • Selective access.
Management Client	1	• Management of the device. • Retrieving data. • Authorized actions in the meter.	• Accessible via BLE, NFC, NB-IoT. • Must be established by the client using the AARQ service with LLS or HLS (mechanism_id(5)). • Supports encryption and authentication.	• Block-transfer-with-get. • Block-transfer-with-set. • Get. • Set. • Multiple-references. • Selective Access.

Client	Client L_SAP	Use Cases	Behavior	Services supported by a Server
			• Closing BLE: on explicit closure, on timeout or on release request	• Block-Transfer-with-Action. • Action.
Firmware Update Client	3	• Firmware update functions.	• Accessible via BLE, NFC, NB-IoT. • Must be established by the client using the AARQ service with LLS or HLS (mechanism_id(5)). • Supports encryption and authentication. • Closing BLE: on explicit closure, on timeout or on release request • Limited set of access services to a limited set of objects.	• Block-transfer-with-get. • Block-transfer-with-set. • Get. • Set. • Multiple-references. • Block-Transfer-with-Action. • Action. • Selective Access.
Pre-Established Client	102	• Retrieving data.	• Accessible via NB-IoT. • Pre established. • Supports encryption and authentication.	• DataNotification.

Table 1

2. Abstract objects

2.1. SAP assignment, COSEM logical device name

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	SAP Assignment	**17**		**0-0:41.0.0.255**							
1	logical_name		octet-string[6]	0000290000FF			R	R	R	R	
2	SAP_assignment_list		asslist_type				R	R	R	R	
	COSEM logical device name	**1**		**0-0:42.0.0.255**							
1	logical_name		octet-string[6]	00002A0000FF			R	R	R	R	
2	value		octet-string[13]		unique identification of the logical device	Handled by the manufacture	R	R	R	R	
	Association LN for current client	**15**		**0-0:40.0.0.255**	**Current Client Association**						
1	logical_name		octet-string[6]	0000280001FF			R	R	R	R	
2	object_list		object_list_type				R	R	R	R	
3	associated_partners_id		associated_partners_type				R	R	R	R	
4	application_context_name		application_context_name				R	R	R	R	
5	xDLMS_context_info		xDLMS_context_type				R	R	R	R	
6	authentication_mechanism_name		mechanism_name				R	R	R	R	
7	LLS_secret		octet-string[]						W	W	
8	association_status		enum				R	R	R	R	
9	security_setup_reference		octet-string				R	R	R	R	
1	reply_to_HLS_authentication							W	W	W	
	Association LN for Public Client	**15**		**0-0:40.0.1.255**	**Public Client Association**						
1	logical_name		octet-string[6]	0000280001FF			R				
2	object_list		object_list_type				R				
3	associated_partners_id		associated_partners_type		Management logical device (1) – public client (16)		R				
4	application_context_name		application_context_name				R				
5	xDLMS_context_info		xDLMS_context_type				R				
6	authentication_mechanism_name		mechanism_name				R				
7	LLS_secret		octet-string[]								
8	association_status		enum				R				
9	security_setup_reference		octet-string				R				
	Association LN for Reading Client	**15**		**0-0:40.0.2.255**	**Reading Client Association**						
1	logical_name		octet-string[6]	0000280002FF				R	R		
2	object_list		object_list_type					R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
3	associated_partners_id		associated_partners_type		Management logical device (1) – Reading client (2)			R	R		
4	application_context_name		application_context_name					R	R		
5	xDLMS_context_info		xDLMS_context_type					R	R		
6	authentication_mechanism_name		mechanism_name					R	RW		
7	LLS_secret		octet-string[]						W		
8	association_status		enum					R	R		
9	security_setup_reference		octet-string					R	R		
1	reply_to_HLS_authentication							W			
	Association LN for Management Client	**15**		**0-0:40.0.3.255**	**Management Client Association**						
1	logical_name		octet-string[6]	0000280003FF					R		
2	object_list		object_list_type						R		
3	associated_partners_id		associated_partners_type		Management logical device (1) – Management client (1)				R		
4	application_context_name		application_context_name						R		
5	xDLMS_context_info		xDLMS_context_type						R		
6	authentication_mechanism_name		mechanism_name						RW		
7	LLS_secret		octet-string[]						W		
8	association_status		enum						R		
9	security_setup_reference		octet-string						R		
1	reply_to_HLS_authentication								W		
	Association LN for FirmwareUpdate Client	**15**		**0-0:40.0.4.255**	**FirmwareUpdate Client Association**						
1	logical_name		octet-string[6]	0000280004FF						R	
2	object_list		object_list_type							R	
3	associated_partners_id		associated_partners_type		Management logical device (1) – FirmwareUpdate client (3)					R	
4	application_context_name		application_context_name							R	
5	xDLMS_context_info		xDLMS_context_type							R	
6	authentication_mechanism_name		mechanism_name							RW	
7	LLS_secret		octet-string[]							W	
8	association_status		enum							R	
9	security_setup_reference		octet-string							R	
1	reply_to_HLS_authentication									W	
	Association LN for PreEstablished Client	**15**		**0-0:40.0.5.255**	**PreEstablished Client Association**						
1	logical_name		octet-string[6]	0000280005FF						R	

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
2	object_list		object_list_type						R		
3	associated_partners_id		associated_partners_type		Management logical device (1) – PreEstablished client (102)				R		
4	application_context_name		application_context_name						R		
5	xDLMS_context_info		xDLMS_context_type						R		
6	authentication_mechanism_name		mechanism_name						R		
7	LLS_secret		octet-string[]						R		
8	association_status		enum						R		
9	security_setup_reference		octet-string						R		

2.2. Identification related objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Device ID 1	**1**		**0-0:96.1.0.255**							
1	logical_name		octet-string[6]	0000600100FF			R	R	R	R	
2	value		octet-string[]		Meter serial number assigned by the producer		R	R	R	R	
	Device ID2	**1**		**0-0:96.1.1.255**							
1	logical_name		octet-string[6]	0000600101FF				R	R		
2	value		octet-string[48]					R	R		
	Device ID3	**1**		**0-0:96.1.2.255**							
1	logical_name		octet-string[6]	0000600102FF				R	R		
2	value		octet-string[48]			Meter type		R	R		
	Device ID4	**1**		**0-0:96.1.3.255**							
1	logical_name		octet-string[6]	0000600103FF				R	R		
2	value		octet-string[48]					R	R		
	Active firmware version	**1**		**w-0:0.2.0.255**							
1	logical_name		octet-string[6]	ww00000200FF	w=8			R	R	R	
2	value		octet-string[5]			Version identifier of the currently active firmware		R	R	R	
	Active firmware signature	**1**		**w-x:0.2.8.255**							
1	logical_name		octet-string[6]	wwxx000208FF	w=8	x – 0 (legally part) x – 1 (non-relevant part)		R	R	R	
2	value		octet-string[8]					R	R	R	

2.3. Security related objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Security Setup for Reading Client	**64**		**0-0:43.0.2.255**							
1	logical_name		octet-string[6]	00002B0002FF				R	R		
2	security_policy		enum		(0) nothing, (1) all messages to be authenticated, (2) all messages to be encrypted, (3) all messages to be authenticated and encrypted		R	R	R		
3	security_suite		enum		(0) AES-GCM-128 for authenticated encryption and AES-128 for key wrapping			R	R		
4	client_system_title		octet-string					R	R		
5	server_system_title		octet-string					R	R		
1	security_activate (data)		method						W		
2	global_key_transfer (data)		method						W		
	Security Setup for Management Client	**64**		**0-0:43.0.3.255**							
1	logical_name		octet-string[6]	00002B0003FF					R		
2	security_policy		enum		(0) nothing, (1) all messages to be authenticated, (2) all messages to be encrypted, (3) all messages to be authenticated and encrypted		R		R		
3	security_suite		enum		(0) AES-GCM-128 for authenticated encryption and AES-128 for key wrapping				R		
4	client_system_title		octet-string						R		
5	server_system_title		octet-string						R		
1	security_activate (data)		method						W		
2	global_key_transfer (data)		method						W		
	Security Setup for FirmwareUpdate Client	**64**		**0-0:43.0.4.255**							
1	logical_name		octet-string[6]	00002B0004FF						R	
2	security_policy		enum		(0) nothing, (1) all messages to be authenticated, (2) all messages to be encrypted, (3) all messages to be authenticated and encrypted		R			R	

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
3	security_suite		enum		(0) AES-GCM-128 for authenticated encryption and AES-128 for key wrapping					R	
4	client_system_title		octet-string							R	
5	server_system_title		octet-string							R	
1	security_activate (data)		method							W	
2	global_key_transfer (data)		method							W	
	Security Setup for PreEstablished Client	**64**		**0-0:43.0.5.255**							
1	logical_name		octet-string[6]	00002B0005FF					R		
2	security_policy		enum		(0) nothing, (1) all messages to be authenticated, (2) all messages to be encrypted, (3) all messages to be authenticated and encrypted		R		R		
3	security_suite		enum		(0) AES-GCM-128 for authenticated encryption and AES-128 for key wrapping				R		
4	client_system_title		octet-string						R		
5	server_system_title		octet-string						R		
1	security_activate (data)		method						W		
2	global_key_transfer (data)		method						W		
	Frame Counter for Reading Client	**1**		**0-1:43.1.2.255**							
1	logical_name		octet-string[6]	00012B0102FF			R	R	R		
2	value		double-long-unsigned				R	R	R		
	Frame Counter for Management Client	**1**		**0-1:43.1.3.255**							
1	logical_name		octet-string[6]	00012B0103FF			R		R		
2	value		double-long-unsigned				R		R		
	Frame Counter for FirmwareUpdate Client	**1**		**0-1:43.1.4.255**							
1	logical_name		octet-string[6]	00012B0104FF			R			R	
2	value		double-long-unsigned				R			R	
	Frame Counter for PreEstablished Client	**1**		**0-1:43.1.5.255**							
1	logical_name		octet-string[6]	00012B0105FF			R		R		
2	value		double-long-unsigned				R		R		

2.4. Clock

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Clock	**8**		**0-0:1.0.0.255**							
1	logical_name		octet-string[6]	0000010000FF			R	R	R		
2	time		octet-string[12]		current local date and time according to technical specifications		R	R	RW		
3	time_zone		Long					R	RW		
4	status		Unsigned					R	R		
5	daylights_savings_begin		octet-string[12]					R	RW		
6	daylights_savings_end		octet-string[12]					R	RW		
7	daylights_savings_deviation		integer					R	RW		
8	daylights_savings_enabled		boolean					R	RW		
9	clock_base		enum					R	R		
	Local time	**1**		**w-0:0.9.1.255**							
1	logical_name		octet-string[6]	0w00000901FF	w=8			R	R		
2	value		octet-string[4]					R	R		
	Local date	**1**		**w-0:0.9.2.255**							
1	logical_name		octet-string[6]	0w00000902FF	w=8			R	R		
2	value		octet-string[5]					R	R		

2.5. States, alarms, events

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	States	**1**		**w-0:96.10.20.255**							
1	logical_name		octet-string[6]	0w00600A14FF	w=8			R	R		
2	value		double-long-unsigned					R	R		
	Alarms (info codes)	**3**		**w-0:97.98.0.255**							
1	logical_name		octet-string[6]	0w00616200FF	w=8			R	R		
2	Value		double-long-unsigned					R	R		
3	scaler_unit		scal_unit_type	{0,255}	scaler=0, unit=255			R	R		
1	Reset(data)								W		
	Alarms filter	**1**		**w-0:97.98.10.255**							
1	logical_name		octet-string[6]	0w0061620AFF	w=8			R	R		
2	value		double-long-unsigned					R	RW		
	Event Object - Standard Event Log	**1**		**w-0:96.11.0.255**							

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
1	logical_name		octet-string[6]	0w00600B00FF	w=8			R	R		
2	value		unsigned		event number (0 to 255)			R	R		
	Standard Event Log	**7**		**w-0:99.98.0.255**							
1	logical_name		octet-string[6]	0w00636200FF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array	{8, 0-0:1.0.0.255, 2}; {1, w-0:96.11.0.255, 2};	clock; event code;			R	R		
4	capture_period		double-long-unsigned	0	asynchronously			R	R		
5	sort_method		enum	1	unsorted (FIFO)			R	R		
6	sort_object		object definition	None	unsorted			R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned	120				R	R		
	Event Object – Firmware Event Log	**1**		**w-0:96.11.4.255**							
1	logical_name		octet-string[6]	0w00600B04FF	w=8			R	R		
2	value		unsigned		event number (0 to 255)			R	R		
	Firmware Event Log	**7**		**w-0:99.98.4.255**							
1	logical_name		octet-string[6]	0w00636204FF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array	{8, 0-0:1.0.0.255, 2}; {1, w-0:96.11.4.255, 2}; {1, w-0:0.2.0.255, 2}; {1, w-0:96.1.6.255, 2};	clock; event code; firmware version; former firmware version;			R	R		
4	capture_period		double-long-unsigned	0	asynchronously			R	R		
5	sort_method		enum	1	unsorted (FIFO)			R	R		
6	sort_object		object definition	None	unsorted			R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned	120				R	R		
	Event Object – Communication Event Log	**1**		**w-0:96.11.7.255**							
1	logical_name		octet-string[6]	0w00600B07FF	w=8			R	R		
2	value		unsigned		event number (0 to 255)			R	R		
	Communication Event Log	**7**		**w-0:99.98.7.255**							
1	logical_name		octet-string[6]	0w00636207FF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array	With LoRaWAN: {8, 0-0:1.0.0.255, 2}; {1, w-0:96.11.7.255, 2}; {128, 0-0:25.14.0.255, 3}; {128, 0-0:25.14.0.255, 9}; {128, 0-0:25.14.0.255, 7};	With LoRaWAN: clock; event code; LoRaWAN Setup state; LoRaWAN Setup device network address;			R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
				{129, 0-0:25.15.0.255, 2}; {129, 0-0:25.15.0.255, 4}; {129, 0-0:25.15.0.255, 5}; {129, 0-0:25.15.0.255, 6}; {129, 0-0:25.15.0.255, 10}; {129, 0-0:25.15.0.255, 11}; {129, 0-0:25.15.0.255, 12}; {129, 0-0:25.15.0.255, 13}; {129, 0-0:25.15.0.255, 14}; With NBIoT: TBD Without LoRaWAN & NBIoT: {8, 0-0:1.0.0.255, 2}; {1, w-0:96.11.7.255, 2};	LoRaWAN Setup device operation; LoRaWAN Diagnostic internal error code; LoRaWAN Diagnostic out_frames_c_counter; LoRaWAN Diagnostic in_frames_u_counter; LoRaWAN Diagnostic in_frames_c_counter; LoRaWAN Diagnostic in per; LoRaWAN Diagnostic n_mean_rssi_rx1; LoRaWAN Diagnostic in_mean_snr_rx1; LoRaWAN Diagnostic in_mean_rssi_rx2; LoRaWAN Diagnostic in_mean_snr_rx2; With NBIoT: TBD Without LoRaWAN & NBIoT: clock; event code;							
4	capture_period		double-long-unsigned	0	asynchronously			R	R		
5	sort_method		enum	1	unsorted (FIFO)			R	R		
6	sort_object		object definition	None	unsorted			R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned	120 (Without LoRaWAN & NBIoT); 380 (With LoRaWAN) ??? (With NBIoT)				R	R		
	Event Object – Security Event Log	**1**		**w-0:96.11.11.255**							
1	logical_name		octet-string[6]	0w00600B0BFF	w=8			R	R		
2	value		unsigned		event number (0 to 255)			R	R		
	Security Event Log	**7**		**w-0:99.98.11.255**							
1	logical_name		octet-string[6]	0w0063620BFF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array	{8, 0-0:1.0.0.255, 2}; {1, w-0:96.11.11.255, 2};	clock; event code;			R	R		
4	capture_period		double-long-unsigned	0	asynchronously			R	R		
5	sort_method		enum	1	unsorted (FIFO)			R	R		
6	sort_object		object definition	None	unsorted			R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned	120				R	R		
	Event Object – Manufacture Specific Event Log	**1**		**w-0:96.11.14.255**							
1	logical_name		octet-string[6]	0w00600B0EFF	w=8			R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
2	value		Unsigned		event number (0 to 255)			R	R		
	Manufacture specific parameter	**1**		**0-0:96.60.63.255**							
1	logical_name		octet-string[6]	0000603C3FFF				R	R		
2	value		double-long-unsigned					R	R		
	Manufacture Specific Event Log	**7**		**w-0:99.98.14.255**							
1	logical_name		octet-string[6]	0w0063620EFF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array	{8, 0-0:1.0.0.255, 2}; {1, w-0:96.11.14.255, 2}; {1, 0-0:96.60.63.255, 2};	clock; event code; manufacture specific parameter			R	R		
4	capture_period		double-long-unsigned	0	asynchronously			R	R		
5	sort_method		enum	1	unsorted (FIFO)			R	R		
6	sort_object		object definition	None	unsorted			R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned	120				R	R		

2.6. Limiters related objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Limiter for flow rate leak	**71**		**0-0:17.0.x.255**							
1	logical_name		octet-string[6]	00001100xxFF		x = 128 (**Limiter for flow rate leak**) x = 129 (**Limiter for flow rate burst**) x = 130 (**Limiter for reverse flow**) x = 131 (**Limiter for water temperature**) x = 132 (**Limiter for battery lifetime**)		R	R		
2	monitored_value							R	R		
3	threshold_active							R	R		
4	threshold_normal					0 - Disabled load limit function		R	RW		
5	threshold_emergency							R	R		
6	min_over_threshold_duration							R	RW		
7	min_under_threshold_duration							R	RW		
8	emergency_profile							R	R		
9	emergency_profile_group_id_list							R	R		
10	emergency_profile_active							R	R		
11	actions		structure			See Appendix A “Actions for limiters”		R	RW		

2.7. Firmware Update objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Image Transfer	**18**		**0-0:44.0.0.255**	Allows transfer of Firmware Image(s) to COSEM servers						
1	logical_name		octet-string[6]	00002C0000FF						R	
2	image_block_size		double-long- unsigned							R	
3	image_transferred_blocks_status		bit-string							R	
4	image_first_not_transferred_block_number		double-long-unsigned							R	
5	image_transfer_enabled		boolean							RW	
6	image_transfer_status		enum							R	
7	image_to_activate_info		array							R	
1	image_transfer_initiate		method							W	
2	image_block_transfer		method							W	
3	image_verify		method							W	
4	image_activate		method							W	
	Image Activation Scheduler	**22**		**0-0:15.0.2.255**	**Activate new firmware**						
1	logical_name		octet-string[6]	00000F0002FF						R	
2	executed_script		Script	0-0:10.0.107.255						R	
3	Type		Enum	1:Fixed time						R	
4	execution_time		array	Time; Date	Time point for activation					RW	

2.8. Other objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Battery level	**3**		**0-0:96.6.3.255**							
1	logical_name		octet-string[6]	0000600603FF				R	R		
2	value		long- unsigned					R	R		
3	scaler_unit		scal_unit_type	{-3,35}	scaler=-3, unit=V resolution: 0.000 V			R	R		
	Restart counter	**1**		**0-0:96.60.37.255**							

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
1	logical_name		octet-string[6]	0000603C25FF				R	R		
2	value		long- unsigned					R	R		
	Local Display Configuration	**1**		**8-0:128.0.2.1**							
1	logical_name		octet-string[6]	080080000201				R	R		
2	Value		structure			See Appendix B		R	RW		
	Test mode	**1**		**0-0:96.60.71.255**							
1	logical_name		octet-string[6]	0000603C47FF				R	R		

2	value		structure			Structure
						{
						mode : boolean; // true-on,false-off
						timeout : double_long_unsigned //
						}
						
						mode - enable/disable test mode (true/false);
						timeout - interval for test mode on, s (1…86401)
								R	RW		

	Transportation mode	**1**		**0-0:96.60.93.255**							
1	logical_name		octet-string[6]	0000603C5DFF				R	R		

2	value		structure			Structure
						{
						mode : boolean;
						mask : long_unsigned;
						volume : double_long_unsigned;
						interval : unsigned;
						}
						
						mode - enable/disable transportation mode (true/false);
						mask - interface`s mask for disabling in transportation mode;
						volume - accumulated volume for exiting from transportation mode, l;
						interval – duration for exiting from transportation mode, days
								R	RW		

3. Water related objects

3.1. Special registers for water meter

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Accumulated volume forward	**3**		**w-0:4.0.0.255**							

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
1	logical_name		octet-string[6]	0w00040000FF	w=8			R	R		
2	value		double-long-unsigned					R	R		
3	scaler_unit		scal_unit_type	{-3,13}	scaler=-3, unit=m3 resolution: 0.000 m3			R	R		
	Consumption volume forward (delta)	**3**		**w-0:4.1.0.255**							
1	logical_name		octet-string[6]	0w00040100FF	w=8			R	R		
2	value		long-unsigned					R	R		
3	scaler_unit		scal_unit_type	{-3,13}	scaler=-3, unit=m3 resolution: 0.000 m3			R	R		
	Accumulated volume reverse	**3**		**w-0:5.0.0.255**							
1	logical_name		octet-string[6]	0w00050000FF	w=8			R	R		
2	value		double-long-unsigned					R	R		
3	scaler_unit		scal_unit_type	{-3,13}	scaler=-3, unit=m3 resolution: 0.000 m3			R	R		
	Consumption volume reverse (delta)	**3**		**w-0:5.1.0.255**							
1	logical_name		octet-string[6]	0w00050100FF	w=8			R	R		
2	value		long-unsigned					R	R		
3	scaler_unit		scal_unit_type	{-3,13}	scaler=-3, unit=m3 resolution: 0.000 m3			R	R		
	Flow rate	**3**		**w-0:2.0.0.255**							
1	logical_name		octet-string[6]	0w00020000FF	w=8			R	R		
2	value		double-long					R	R		
3	scaler_unit		scal_unit_type	{-6,15}	scaler=-6, unit=m3/h resolution: 000.000000 m3/h			R	R		
	Media Temperature	**3**		**w-0:3.0.0.255**							
1	logical_name		octet-string[6]	0w00030000FF	w=8			R	R		
2	value		double_long_unsigned					R	R		
3	scaler_unit		scal_unit_type	{-3,9}	scaler=-3, unit=°C, resolution: 000.000 °C			R	R		
	Ambient Temperature	**3**		**0-0:96.9.0.255**							
1	logical_name		octet-string[6]	0000600900FF				R	R		
2	value		double_long_unsigned					R	R		
3	scaler_unit		scal_unit_type	{0,9}	scaler=0, unit=°C, resolution: 000 °C			R	R		

3.2. Billing Periods and Profiles

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Active end of billing period 1	**22**		**w-0:15.0.0.255**		**Single action scheduler for Stored Billing Values Profile**					
1	logical_name		octet-string[6]	0w000F0000FF	w=8			R	R		
2	executed_script		script	0-0:10.0.1.255	billing period reset	MDI reset / end of billing period		R	R		
3	type		enum	1	fixed time, wildcard in date			R	R		
4	execution_time		array		Time = "00000000"; Date = "FFFFFF01FF", at midnight of the first day of every month			R	R		
	Passive end of billing period 1	**1**		**w-0:94.48.0.255**	**Date/time of passive end of billing period.**						
1	logical_name		octet-string[6]	0w005E3000FF	w=8			R	R		
2	value		octet-string[12]					R	RW		
	Billing period 1	**7**		**w-0:98.1.0.255**	**End of billing values**	Stored Billing Values Profile					
1	logical_name		octet-string[6]	0w00620100FF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array					R	RW		
4	capture_period		double-long-unsigned	0	triggered from single action scheduler with billing period 1			R	R		
5	sort_method		enum	1	unsorted (FIFO)			R	R		
6	sort_object		object definition	none	unsorted			R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned	≥12	≥ 12 months			R	RW		
	Time stamp of billing period 1 last reset	**1**		**w-0:0.1.2.255**	**Date/time of the most recent billing period**						
1	logical_name		octet-string[6]	0w0000102FF	w=8			R	R		
2	value		octet-string[12]		Date/time format			R	R		
	Counter of billing period 1 reset	**1**		**w-0:0.1.0.255**							
1	logical_name		octet-string[6]	0w0000100FF	w=8			R	R		
2	value		long-unsigned					R	R		

3.3. Interval profiles

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	AMR profile status for Interval Profile 1	**1**		**w-0:96.10.7.255**							
1	logical_name		octet-string[6]	0w00600A07FF	w=8			R	R		
2	value		unsigned					R	R		
	Interval Profile 1	**7**		**w-0:99.1.0.255**							
1	logical_name		octet-string[6]	0w00630100FF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array	{1, 0-0:1.1.0.255, 2, 0} {3, 8-0:4.1.0.255, 2, 0}, {3, 8-0:5.1.0.255, 2, 0},	DeltaForwardVolume, DeltaReverseVolume, UnixTime			R	RW		
4	capture_period		double-long-unsigned	3600 s		900, 3600, 86400		R	RW		
5	sort_method		enum	1				R	R		
6	sort_object		object definition	none				R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned					R	RW		
	AMR profile status for Interval Profile 2	**1**		**w-0:96.10.8.255**							
1	logical_name		octet-string[6]	0w00600A08FF	w=8			R	R		
2	value		unsigned					R	R		
	Interval Profile 2	**7**		**w-0:99.2.0.255**							
1	logical_name		octet-string[6]	0w00630200FF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array					R	RW		
4	capture_period		double-long-unsigned	86400 s		900, 3600, 86400		R	RW		
5	sort_method		enum	1				R	R		
6	sort_object		object definition	none				R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned					R	RW		

3.4. Valve related objects (optional)

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Valve serial number	**1**		**w-0:96.61.8.255**							
1	logical_name		octet-string[6]	0w00603D08FF	w=8			R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
2	value		double-long-unsigned					R	RW		
	Valve key	**1**		**w-0:96.61.2.255**							
1	logical_name		octet-string[6]	0w00603D02FF	w=8			R	R		
2	value		octet-string[16]					R	RW		
	Valve type	**1**		**w-0:96.61.3.255**							
1	logical_name		octet-string[6]	0w00603D03FF	w=8			R	R		
2	Value		long-unsigned			Example: 8500		R	R		
	Valve firmware version	**1**		**w-0:96.61.4.255**							
1	logical_name		octet-string[6]	0w00603D04FF	w=8			R	R		
2	value		octet-string[5]			Example – “v1001”		R	R		
	Valve control	**70**		**w-0:96.3.10.255**							
1	logical_name		octet-string[6]	0w0060030AFF	w=8			R	R		
2	output_state		boolean					R	R		
3	control_state		Enum	0;1;2				R	R		
4	control_mode		Enum					R	RW		
1	remote_valve_close		method						W		
2	remote_valve_open (100%)		method						W		
-3	remote_valve_open (10%)		method						W		
-4	remote_valve_open (50%)		method						W		
	Valve status	**1**		**w-0:96.61.7.255**							
1	logical_name		octet-string[6]	0w00603D07FF	w=8			R	R		
2	value		unsigned			0 – valve is closed; 10 – valve is opened (10%); 50 – valve is opened (50%); 100 – valve is opened (100%);		R	R		
	Event Object - Valve Event Log	**1**		**w-0:96.11.2.255**							
1	logical_name		octet-string[6]	0w00600B02FF	w=8			R	R		
2	value		unsigned		event number (0 to 255)			R	R		
	Valve Event Log	**7**		**w-0:99.98.2.255**							
1	logical_name		octet-string[6]	0w00636202FF	w=8			R	R		
2	buffer		array					R	R		
3	capture_objects		array	{8, 0-0:1.0.0.255, 2}; {1, w-0:96.11.2.255, 2}; {70, w-0:96.3.10.255, 3}; {70, w-0:96.3.10.255, -1};	clock; event code; valve control status; reason;			R	R		
4	capture_period		double-long-unsigned	0	asynchronously			R	R		
5	sort_method		enum	1	unsorted (FIFO)			R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
6	sort_object		object definition	None	unsorted			R	R		
7	entries_in_use		double-long-unsigned					R	R		
8	profile_entries		double-long-unsigned	200				R	R		

4. Meter communication interfaces

4.1. LoRaWAN related objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	LoRaWAN module firmware version	**1**		**0-0:96.63.0.255**							
1	logical_name		octet-string[6]	0000603F00FF				R	R		
2	value		octet-string		LoRaWAN module firmware version	Maximum 40 symbols		R	R		
	LoRaWAN Application Key	**1**		**0-0:96.63.1.255**							
1	logical_name		octet-string[6]	0000603F01FF				R	R		
2	value		octet-string[16]						W		
	LoRaWAN Network Key	**1**		**0-0:96.63.3.255**							
1	logical_name		octet-string[6]	0000603F03FF				R	R		
2	value		octet-string[16]						W		
	LoRaWAN communication backoff parameters	**1**		**0-0:96.63.8.255**							
1	logical_name		octet-string[6]	0000603F08FF				R	R		

2	value		structure	{14,4}	Backoff communication parameters	Structure
						{
						ACK_LIMIT: unsigned;
						ACK_DELAY: unsigned;
						}
								R	RW		

	LoRaWAN channels mask	**1**		**0-0:96.63.14.255**							
1	logical_name		octet-string[6]	0000603F0EFF				R	R		
2	value		Bit-srting[16]	1111111110000000b	Channels mask for static channels regions (US915, AU915).	Use 9 bits only		R	RW		
	LoRaWAN Setup	128		**0-0:25.14.0.255**							
1	logical_name		octet-string[6]	0000190E00FF				R	R		
2	class		enum			Class A = 0		R	R		
3	state		enum			not connected = 0, connecting state (joining) = 1,		R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
						not connected, connected at least one time = 2, connected = 3, connection error (join error) = 4					
4	max_transmit_EIRP_setting		integer					R	R		
5	ADR_mode		boolean					R	RW		
6	regional_parameters		enum			EU868 =0, US915 = 1, CN779 =2 (Not supported), EU433 = 3, AU915 = 4, CN470 = 5 (Not supported), AS923-1 = 6, AS923-2 = 7, AS923-3 = 8, KR920 = 9(Not supported), IN865 = 10, RU864 = 11		R	RW		
7	device_operation		structure					R	R		
8	modem_versions		structure					R	R		
9	devAddr		double-long-unsigned					R	R		
10	join_strategy		enum			LoRaWANJoinOTAA = 0, LoRaWANJoinABP = 1		R	RW		
11	multicasts_parameters		array			Not supported		R	R		
1	disconnect_from_network()		method						W		
2	change_class(data)		method			Not supported					
3	change_region(data)		method						W		
	LoRaWAN Diagnostic	129		**0-0:25.15.0.255**							
1	logical_name		octet-string[6]	0000190F00FF				R	R		
2	internal_error_code		enum			LoRaWANDiagErrorSuccess = 0, LoRaWANDiagErrorJoin = 1, LoRaWANDiagErrorACK = 2, LoRaWANDiagErrorModuleComm = 3		R	R		
3	out_frames_u_counter		double-long-unsigned					R	R		
4	out_frames_c_counter		double-long-unsigned					R	R		
5	in_frames_u_counter		double-long-unsigned					R	R		
6	in_frames_c_counter		double-long-unsigned					R	R		
7	in_mac_command_counter		double-long-unsigned					R	R		
8	in_mac_ans_error_counter		double-long-unsigned					R	R		
9	in_mac_ignored_counter		double-long-unsigned					R	R		
10	in_per		integer					R	R		
11	in_mean_rssi_rx1		integer					R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
12	in_mean_snr_rx1		integer					R	R		
13	in_mean_rssi_rx2		integer					R	R		
14	in_mean_snr_rx2		integer					R	R		
1	reset (data)		method						W		
	LoRaWAN: Push setup for sending periodical data	**40**		**0-0:25.9.0.255**							
1	logical_name		octet-string[6]	0000190900FF				R	R		
2	push_object_list		array					R	RW		
3	send_destination_and_method		structure					R	RW		
4	communication_window		array					R	R		
5	randomisation_start_interval		long-unsigned	0s		0 - no delay is active; Randomization start interval minimum >= 300s; Randomization start interval maximum <= 10800s;		R	RW		
6	number_of_retries		unsigned	0		Maximum number of retries = 10		R	RW		
7	repetition_delay		long-unsigned	0s				R	RW		
1	push (data)		method		Send Readout				W		
	LoRaWAN: Readout Scheduler	**22**		**0-0:15.0.4.255**							
1	logical_name		octet-string[6]	00000F0004FF				R	R		
2	executed_script		Script					R	R		
3	Type		Enum					R	R		
4	execution_time		array	Time; Date				R	R		
	LoRaWAN: Readout period	3		**0-0:96.50.3.255**							
1	logical_name		octet-string[6]	0000603203FF				R	R		
2	value		double-long-unsigned			0: off 300: 5 min (not recommended) 600: 10 min (not recommended) 900: 15 min (not recommended) 1200: 20 min (not recommended) 1800: 30 min (not recommended) 3600: 1 hour (not recommended) 7200: 2 hours (not recommended) 10800: 3 hours (not recommended) 14400: 4 hours (not recommended) 21600: 6 hours 28800: 8 hours 43200: 12 hours 86400: 24 hours		R	RW		
3	scaler_unit		scal_unit_type	{0,7}	scaler=0, unit=second			R	R		

See “ADR. LoRaWAN Protocol Stack and Data Structures”.

4.2. wM-Bus related objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	wM-Bus Transmission period	**3**		**0-0.96.61.13.255**							
1	logical_name		octet-string[6]	0000603D0DFF				R	R		
2	value		double-long-unsigned			20 s		R	RW		
3	scaler_unit		scal_unit_type	{0,7}	scaler=0, unit=second			R	R		
	wM-Bus Update Period	**3**		**0-0.96.61.11.255**							
1	logical_name		octet-string[6]	0000603D0BFF				R	R		
2	value		double-long-unsigned			3600 s		R	RW		
3	scaler_unit		scal_unit_type	{0,7}	scaler=0, unit=second			R	R		
	wM-Bus Transmission window	**1**		**0-0.96.61.12.255**							
1	logical_name		octet-string[6]	0000603D0CFF				R	R		

2	value		structure			Structure
						{
						Start hour : unsigned; // 0…23
						Finish_hour : unsigned; // 0…23
						}
								R	RW		

	wM-Bus Security Mode	**1**		**0-0.96.63.9.255**							
1	logical_name		octet-string[6]	0000603F09FF				R	R		

2	value		enum			wmbus_security_mode
						{
						wmbusSecModeDisabled = 0,
						wmbusSecMode5 = 5,
						wmbusSecMode7 = 7
						}
								R	RW		

See “ADR. wM-Bus Protocol Stack and Data Structures”.

4.3. NB-IoT related objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	TCP-UDP setup	**41**		**0-0:25.0.0.255**							
1	logical_name		octet-string[6]	0000190000FF				R	R		
2	TCP-UDP_port		long-unsigned	4059	4059/TCP and 4059/UDP used for			R	RW		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
					DLMS/COSEM						
3	IP_reference		octet-string[6]	0-0:25.1.0.255	Reference to Network layer setup object			R	R		
4	MSS		long-unsigned	576	Maximum Segment Size	Dynamical value, depends of network conditions.		R	RW		
5	nb_of_sim_conn		unsigned	1	Maximum number of simultaneous connections			R	R		
6	inactivity_time_out		long-unsigned	20	unit=seconds	0 - disabled		R	RW		
	IPv4 setup	**42**		**0-0:25.1.0.255**							
1	logical_name		octet-string[6]	0000190100FF				R	R		
2	DL_reference		octet-string[6]	0-0:25.3.0.255	References a Data Link layer setup object			R	R		
3	IP_address		double-long-unsigned					R	R		
4	multicast_IP_address		array			Not used		R	R		
5	IP_options		array			Not used		R	RW		
6	subnet_mask		double-long-unsigned	0xFFFFFFFF				R	R		
7	gateway_IP_address		double-long-unsigned		Gateway IPv4 address	Not used		R	R		
8	use_DHCP_flag		boolean	1	(1) TRUE / (0) FALSE	Always = TRUE		R	R		
9	primary_DNS_address		double-long-unsigned		DNS IPv4 address	For DNS registration		R	RW		
10	secondary_DNS_address		double-long-unsigned		DNS IPv4 address	Not used		R	R		
	PPP Setup	**44**		**0-0:25.3.0.255**		**version=0**					
1	logical_name		octet-string[6]	0000190300FF							
2	PHY_reference		octet-string[6]	0-0:25.4.0.255							

3	LCP_options		array		LCP_options_type ::= array
					LCP_options_type_element
					
					LCP_options_type_element ::= structure
					{
					LCP_Option_Type: unsigned,
					LCP_Option_Length: unsigned,
					LCP_Option_Data: CHOICE
					{
					structure [2] -- for Callback-data
					boolean [3] -- for ProtF-Compr and AdCtr-Compr,
					double-long-unsigned [6] -- for ACCM and Mag-Num,
					unsigned [17] -- for FCS-Alternatives,
					long-unsigned [18] -- for MRU and Auth-Prot
					}
					}
						Contains the necessary parameters to support the selected
						LCP configuration options.
						Support only LCP_Option_Type = 3 (Authentication-Protocol)					

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
					Authentication-Protocol, LCP_Option_Type = 3. This configuration option provides a method to negotiate the use of a specific protocol for authentication. By default, authentication is not required. The value indicates the authentication protocol used on the given PPP link. Possible values are: 0x0000 – No authentication protocol is used, 0xc023 – The PAP protocol is used, 0xc223 – The CHAP protocol is used						

4	IPCP_options		array		IPCP_options_type ::= array
					IPCP_options_type_element
					
					IPCP_options_type_element ::= structure
					{
					IPCP_Option_Type: unsigned,
					IPCP_Option_Length: unsigned,
					IPCP_Option_Data: CHOICE
					{
					array [1] -- for Pref-Peer-IP,
					-- each IP address is of type double-long-unsigned
					boolean [3] -- for GAO and USIP,
					double-long-unsigned [6] -- for Pref-Local-IP,
					long-unsigned [18] -- for IP-Comp-Prot
					}
					}
					
					IP-Compression-Protocol (IP-Comp-Prot)
					IPCP_Option_Type
					= 2.
					
					This configuration option provides a way to negotiate the use
					of a specific compression protocol. By default, compression is
					not enabled.
						Contains the necessary parameters for the IP Control Protocol
						– the Network Control Protocol module of the PPP – that
						allow the negotiation of desirable Internet Protocol
						parameters.
						
						Possible value is:
						0x0000 – No IP Compression is used					

5	PPP_authentication		null-data		PPP_auth_type ::= CHOICE
					{
					null-data [0] -- used when no authentication is required,
					structure [2] -- PAP_login or CHAP_algorithm or EAP_params
					}
					
					PAP_login ::= structure
					{
					user-name: octet-string,
					PAP-password: octet-string
						Contains the parameters required by the PPP authentication
						procedure used.					

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC

					}
					CHAP_algorithm ::= structure
					{
					user-name: octet-string,
					algorithm_id: unsigned
					}
					
					Possible values for CHAP-algorithm-id parameter today are as follows:
					0x05: CHAP with MD5 (default), see RFC 1994.
					0x06:SHA-1,
					0x80: MS-CHAP, see RFC 2433
					0x81: MS-CHAP-2, see RFC 2759.						

	Modem setup	**45**		**0-0:25.4.0.255**							
1	logical_name		octet-string[6]	0000190400FF				R	R		
2	APN		octet-string		Defines the access point name of the network.			R	RW		
3	PIN_code		long-unsigned	0	Holds the personal identification number.			R	RW		

4	quality_of_service		structure		quality_of_service ::= structure
					{
					default: qos_element,
					requested: qos_element
					}
					qos_element ::= structure
					{
					precedence: unsigned,
					delay: unsigned,
					reliability: unsigned,
					peak throughput: unsigned,
					mean throughput: unsigned
					}
						Specifies the quality of service parameters. It is a structure of 2 elements:
						- the first one defines the default or minimum characteristics of the concerned network; these parameters have to be set to best effort value;
						- the second element defines the requested parameters.
								R	RW		

	GSM diagnostics	**47**		**0-0:25.6.0.255**		**version = 2**					
1	logical_name		octet-string[6]	0000190600FF				R	R		
2	operator		visible-string	visible_string[0]		Holds the name of the network operator e.g. “YourNetOp”		R	R		
3	status		enum	0	(0) not registered, (1) registered, home network, (2) not registered, but searching a new operator to register to, (3) registration denied, (4) unknown, (5) registered, roaming (6) .. (255) reserved	Indicates the registration status of the modem		R	R		
4	cs_attachment		enum	0	(0) inactive, (1) incoming call, (2) active, (3) .. (255) reserved	Indicates the current circuit switched status		R	R		
5	ps_status		enum	0	(0) inactive, (1) GPRS, (2) EDGE, (3) UMTS, (4) HSDPA,	The **ps_status** value field indicates the packet switched status of the modem		R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
					(5) LTE, (6) .. (255) reserved						

6	cell_info		structure	cell_info_type {
				cell_ID = 0
				location_ID = 0
				signal_quality = 99
				ber = 99
				mcc = 0
				mnc = 0
				channel_number = 0
				}
					cell_info_type ::= structure
					{
					cell_ID: double-long-unsigned,
					location_ID: long-unsigned,
					signal_quality: unsigned,
					ber: unsigned,
					mcc: long-unsigned,
					mnc: long-unsigned,
					channel_number: double-long-unsigned
					}
						cell_ID: Two-byte cell ID in hexadecimal format
						
						location_ID: Two-byte location area code (LAC) in hexadecimal format (e.g.
						"00C3" equals 195 in decimal)
						
						signal_quality: Represents the signal quality:
						(0) -113 dBm or less,
						(1) -111 dBm,
						(2 .. 30) -109 .. -53 dBm,
						(31) -51 dBm or greater,
						(99) not known or not detectable
						ber: Bit error (BER) measurement in percent:
						(0 .. 7) as RXQUAL_n values specified in ETSI GSM 05.08 8.2.4.
						(99) not known or not detectable
						
						mcc: Mobile Country Code of the serving network, as defined in ITU-T E.212 (05.2008) SERIES E;
						
						mnc: Mobile Network Code of the serving network, as defined in ITU-T E.212 (05.2008) SERIES E;
						
						channel_number: Represents the absolute radio-frequency channel number (ARFCN or EARFCN for LTE network)
								R	R		

7	adjacent_cells		array	array {length=0}	array adjacent_cell_info
					adjacent_cell_info::= structure
					{
					cell_ID: double-long-unsigned,
					signal_quality: unsigned
					}
						cell_ID: Two-byte cell ID in hexadecimal format
						
						signal_quality: Represents the signal quality:
						(0) -113 dBm or less,
						(1) -111 dBm,
						(2 .. 30) -109 .. -53 dBm,
						(31) -51 dBm or greater,
						(99) not known or not detectable
								R	R		

8	capture_time		date-time			Holds the date and time when the data has been last captured.		R	R		
	LTE monitoring	**151**		**0-0:25.11.0.255**		**version=1**					
1	logical_name		octet-string[6]	0000190B00FF				R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC

2	LTE_network_parameters		Structure		LTE_network_parameters_type ::= structure
					{
					T3402: long-unsigned,
					T3412: long-unsigned,
					T3412ext2: double-long-unsigned,
					T3324 long-unsigned,
					TeDRX double-long unsigned,
					TPTW long-unsigned,
					qRxlevMin: integer,
					qRxlevMinCE-r13: integer,
					qRxlevMinCE1-r13 integer
					}
						T3402: timer in seconds, used on PLMN selection procedure and sent by the network to the modem. Refer to 3GPP TS 24.301 V13.4.0 (2016-01) for details.
						
						T3412: timer in seconds, used to manage the periodic tracking area updating procedure and sent by the network to the modem. Refer to 3GPP TS 24.301 V13.4.0 (2016-01) for details.
						
						T3412ext2: timer in seconds (extended periodic tracking area update timer). Refer to 3GPP TS 24.301 V13.4.0 (2016-01) and 3GPP TS 24.008 V13.7.0 (2016-10) for details.
						
						T3324 timer in seconds (Power saving mode active timer). Refer to 3GPP TS 24.301 V13.4.0 (2016-01) and 3GPP TS 24.008 V13.7.0 (2016-10) for details.
						
						TeDRX: timer (Extended Idle mode DRX cycle timer). Refer to 3GPP TS 24.301 V13.4.0 (2016-01) and 3GPP TS 24.008 V13.7.0 (2016-10) for details. The double-long unsigned value shall be multiplied by 0,01 to get the real value in seconds. E.g. 512 represents 5,12 seconds
						
						TPTW: timer (Extended Idle mode DRX paging time window). Refer to 3GPP TS 24.301 V13.4.0 (2016-01) and 3GPP TS 24.008 V13.7.0 (2016-10) for details. The long unsigned value shall be multiplied by 0,01 to get the real value in seconds. E.g. 512 represents 5,12 seconds
						
						qRxlevMin: the minimum required Rx level in the cell in dBm as defined in
								R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
						3GPP TS 36.304 V13.8.0 (2018-01). **qRxlevMinCE-r13**: the minimum required Rx level in enhanced coverage CE Mode A, LTE Cat M1. For this mode a value from -70…-22 in steps of 1 is required. NOTE 1 This field is not used in case of LTE Cat NB1 or NB2. **qRxlevMinCE1-r13**: the minimum required Rx level in enhanced coverage CE Mode B, LTE Cat M1. For this mode a value from -78…-22 in steps of 1. NOTE 2 This field is not used in case of LTE Cat NB1 orNB2					

3	LTE_quality_of_service		Structure		LTE_QoS_type ::= structure
					{
					(N)RSRQ: integer,
					(N)RSRP: integer,
					SNR: integer,
					Coverage Enhancement: enum
					}
						(N)RSRQ: represents the signal quality as defined in 3GPP TS 36.133. The use of this parameter can be determined from the GSM diagnostics IC, ps_status attribute:
						
						– For LTE Cat NB1 and LTE Cat NB2 a value range from -30 up to 46 is necessary to represent NRSRQ. Refer to 3GPP TS 36.133 V14.4.0 (2017-06) for details.
						
						(-30) -34 dB,
						(-29) -33,5 dB,
						(-28)..(-1) -33 dB .. -19,5 dB,
						(0) -19,5 dB or less,
						(1) -19 dB,
						(2)..(31) -18,5 dB .. -4 dB,
						(32) -3.5 dB,
						(33) -3 dB,
						(34) -3 dB or less,
						(35) -2.5 dB,
						(36) -2 dB,
						(37)..(45) -1.5 dB .+2.5 dB,
						(46) 2.5 dB or better,
						(99) not known or not detectable,
						other values reserved
						
						(N)RSRP: represents the signal level as defined in 3GPP TS 36.133. The use of this parameter is determined from the GSM diagnostics IC, ps_status attribute:
								R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
						– For ps_status = 8 or 9 (LTE Cat NB1 or LTE Cat NB2) a value range from 0 to 113 is necessary to represent NRSRP value. Refer to 3GPP TS 36.133 V14.4.0 (2017-06) for details. (0) -156 dBm, (1) -155 dBm, (2) -154 dBm (3)..(112) -153 dBm .. -44 dBm, (113) -44 dBm or better, (127) not known or not detectable, other values reserved **SNR**: the Signal to Noise Ratio in a range from -20 dB to 50 dB. Refer to 3GPP TS 36.101 V15.4.0 (2019-01) for details. **Coverage Enhancement**: Level 0,1 or 2 in case of LTE Cat NB1/NB2. Refer to 3GPP TS 36.331 V15.5.1 (2019-05), 3GPP TS 36.321 V15.5.0 (2019-05) and 3GPP TS 36.213 V15.5.0 (2019-05) for details.					
	Integrated Circuit Card ID (ICC-ID)	**1**		**0-0:94.39.61.255**							
1	logical_name		octet-string[6]	00005E273DFF				R	R		
2	value		visible-string[*]		max_len = 24	Allows you to retrieve the ICC-ID code of the SIM currently in use		R	R		
	Communication Monitor	**1**		**0-0:94.39.56.255**							
1	logical_name		octet-string[6]	00005E2738FF				R	R		

2	value		structure		value ::= structure {
					number_of_activations: double-long-unsigned,
					total_time_of_activity: double-long-unsigned,
					number_of_network_registrations: double-long-unsigned,
					total_time_spent_in_ network _registration: double-long-unsigned,
					number_of_sent_byte: double-long-unsigned,
					number_of_received_byte: double-long-unsigned, total_time_spent_in_deep_sleep: double-long-unsigned,
					total_time_spent_in_paging: double-long-unsigned,
					number_of_received_firmware_packet: double-long-unsigned
					}
						Communication statistics of NB-IoT channel:
						
						• number_of_activations: The total number of activations of the remote communication module;
						• total_time_of_activity: The total time spent with the remote communication module active (seconds);
						• number_of_network_registrations: The total number of successful registrations on the communication network, including both the attach and IP address obtaining phases;
						• total_time_spent_in_ network_registration: The total time spent in network registration,
								R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
						(seconds), includes the attach phase and the IP address acquisition phase (possibly extending to the timeout); • number_of_sent_byte: The total number of bytes sent; • number_of_received_bytes: The total number of bytes received; • total_time_spent_in_deep_sleep: The total time spent in the PSM phase (seconds); • total_time_spent_in_paging: the total time spent in the "paging" phase (seconds); • number_of_received_firmware_packet: TBD					
	NB-IoT Mode Setup	**1**		**0-0.96.63.16.255**							
1	logical_name		octet-string[6]	0000603F10FF				R	R		

2	value		enum	enum NBIotChannelMode {
				0 – Normal mode;
				1 – Idle mode;
				2 – Test mode
				}
								R	RW		

1	ExecuteATCommand		method	[In] structure
				[Out] visible-string, up to 30 symbols
					value ::= structure at_cmd {
					timeout: double-long-unsigned;
					command: visible-string
					}
						In "Test mode" execute any AT-command. The input parameter must contain a single-line command.
						
						timeout: set waiting answer timeout in ms.
						
						command: AT-command and answer have up to 30 symbols
									W		

2	StartSignalGeneration		method	[In] structure generation parameters	value := structure generation_parameters {
					duration: long- unsigned;
					bandNum: long-unsigned;
					carrierFrequency: long-unsigned;
					txPower: long;
					signalType: long-unsigned;
					subCarrierOffset: long-unsigned;
					}
						For TRP measuring			W		

3	StopSignalGeneration		method			In "Test mode" stopping current operation execution.			W		
	NB-IoT Setup	**1**		**0-0.96.63.17.255**							
1	logical_name		octet-string[6]	0000603F11FF				R	R		
2	Value		structure		value:: = structure { PLMN_setting: double-long-unsigned PDP: visible-string (length 8 max) band: unsigned eDRX_cycle length: enum t_3412: long-unsigned	**PLMN_setting**: Identifies the PLMN of the network to which the GdM must connect in numeric format, in the [20201-732123] field.		R	RW		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
					t_3324: long-unsigned PTW: enum energy_strategy: enum }	The value 0 (zero) indicates that the GdM can connect to any of the visible networks according to criteria not established by this standard. **PDP**: PDP Type, only the "IP" value is supported. **Band**: Describes the band used by means of a numerical coding according to ETSI TS136 104 V13.5.0 (2016-10), the range of possible values is from 1 to 70, for example: 5=850MHz (APAC), 8=900MHz (EMEA), 20=800MHz (EMEA), 28=700MHz (ANZ) **eDRX_cycle_length**: As per 3GPP TS 24301 table and coded as indicated in 3GPP TS24.008 **t_3412:** corresponds to 3GPP type 3 timer 24.008 table 10.5.163 Expressed in seconds, between 0 and 413 days, encoded as Time 3 (see 3GPP TS24.008) **t_3324**: corresponds to 3GPP type 2 timer 24.008 table 10.5.163 Expressed in seconds, between 0 and 186 minutes, encoded as Time 2 (ref 3GPP TS24.008) **PTW**: Paging Time Window, expressed in accordance with 3GPP TS 24.008, clause 10.5.5.32 **energy_strategy**: 0 As per the following values: 0 - Paging Window disabled and eDRX disabled; 1 - Paging Window disabled and eDRX enabled; 2 – Paging Window enabled and eDRX disabled; 3 – Paging Window enabled and eDRX enabled.					
	NB-IoT Current Parameters	**1**		**0-0.96.63.18.255**							

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
1	logical_name		octet-string[6]	0000603F12FF				R	R		

2	Value		structure		value:: = structure {
					EARFCN: long-unsigned
					PLMN: double-long-unsigned
					access_technology:
					visible-string (length 16 max)
					RRC: long-unsigned
					t_3324: long-unsigned
					}
						EARFCN:
						This field, set to [0-65535], provides an optional mechanism to lock a specific
						channel number (EUTRA Absolute Radio Frequency Channel Number).
						
						PLMN:
						Identifies the network PLMN in numeric format, in the [20201-732123] field.
						
						access_technology:
						Defines there technology Of access. This parameter
						Optional at the moment. Default: E-UTRAN. Other types are: GRAN, GERAN, UTRAN.
						
						RRC: Expressed in seconds (max 50)
						
						t_3324: Expressed in seconds, between 0 and
						186 minutes, encoded as Time 2 (ref 3GPP TS24.008)
								R	R		

	NB-IoT Timeouts	**1**		**0-0.96.63.15.255**							
1	logical_name		octet-string[6]	0000603F0FFF				R	R		

2	value		structure	{80, 20, 120}	value:: = structure {
					session_max_duration: double-long-unsigned;
					inactivity_timeout: double-long-unsigned;
					network_attach_timeout: double-long-unsigned;
					}
						session_max_duration (sec):
						minimum = 15, maximum = 3600
						
						inactivity_timeout (sec):
						minimum = 15, maximum = 255
						Note: equal to TCP_UDP_SETUP. inactivity_time_out attribute.
						
						network_attach_timeout (sec):
						minimum = 10, maximum = 600
								R	RW		

	PP4 Network Status	**1**		**0-1:96.5.4.255**							
1	logical_name		octet-string[6]	0001600504FF				R	R		
2	value		long-unsigned			Bits description: B0: RF Mode: 0 = Not Active, 1 = Modem Active B1: to the network (“network attach”) 0 = FALSE, 1 = TRUE B2: Connection status with CAS: 0 = FALSE, 1 = TRUE B3: Orphan: 0 = FALSE, 1 = TRUE		R	R		

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
						B4-B5: Strategy in Use: 0 = S00, 1 = S01, 2 = S02, 3 = Reserved B6: Communication local in progress: 0 = FALSE, 1 = TRUE B7: Timeout of communication					

4.4. PushSetup, Compact frame and Schedule objects

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
	Compact Frame – Daily Consumption Report	**62**		**0-0:66.0.48.255**							
1	logical_name		octet-string[6]	0000420030FF		CF-48 Daily Consumption Report		R	R		
2	compact_buffer		octet-string					R	R		
3	capture_objects		array	{62, 0-0:66.0.30.255, 4, 0}, {1, 0-0:1.1.0.255, 2, 0}, {1, 0-1:96.5.4.255, 2, 0}, {70, 0-0:96.3.10.255, 2, 0}, {70, 0-0:96.3.10.255, 3, 0}, {1, 0-0:96.15.0.255, 2, 0}, {1, 0-0:96.15.7.255, 2, 0}, {1, 8-1:96.5.1.255, 2, 0}, {3, 8-0:4.0.0.255, 2, 0}, {3, 8-0:5.0.0.255, 2, 0}, {7, 8-0:99.1.0.255, 2, xxx}, {1, 0-1:43.1.3.255, 2, 0}	Template ID, unix time, PP4 Network Status, Disconnect control attr2, Disconnect control attr3, Standart Event Counter, Communication Event Counter, Daily Diagnostic, Forward volume, Reverse volume, Interval profile 1 (last 72 cell), Management Frame Counter	See Appendix C “Compact frame descriptions”		R	RW		
4	template_id		unsigned	48				R	RW		
5	template_description		octet-string					R	R		
6	capture_method		enum					R	R		
	Push Setup – Daily Consumption Report	**40**		**0-1:25.9.0.255**							
1	logical_name		octet-string[6]	0001190900FF				R	R		
2	push_object_list		array	{ 62, 0-0:66.0.48.255, 2, 0 }		Compact Frame – Daily Consumption Report See Appendix D “DataNotification payload description”		R	RW		
3	send_destination_and_method		structure					R	RW		
4	communication_window		array					R	RW		
5	randomisation_start_interval		long-unsigned	0				R	RW		
6	number_of_retries		unsigned	0				R	RW		
7	repetition_delay		long-unsigned	0				R	RW		
1	push								W		
	Scheduler - Daily Consumption Report	**22**		**0-1:15.0.4.255**							

#	Object/Attribute Name	CL	Type	Value	Meaning	Comments	Access Rights				
							PC	RC	MC	FC	PrC
1	logical_name		octet-string[6]	00010F0004FF				R	R		
2	executed_script		Script					R	R		
3	Type		Enum					R	R		
4	execution_time		array	Time; Date				R	RW		
	Compact Frame – Weekly TLC Report	**62**		**0-0:66.0.49.255**							
1	logical_name		octet-string[6]	0000420031FF		CF-49 (Weekly TLC Report)		R	R		
2	compact_buffer		octet-string					R	R		
3	capture_objects		array					R	RW		
4	template_id		unsigned	49				R	RW		
5	template_description		octet-string					R	R		
6	capture_method		enum					R	R		
	Push Setup – Weekly TLC Report	**40**		**0-2:25.9.0.255**							
1	logical_name		octet-string[6]	0002190900FF				R	R		
2	push_object_list		array	{62, 0-0:66.0.49.255, 2, 0}		Compact Frame – Weekly TLC Report		R	RW		
3	send_destination_and_method		structure					R	RW		
4	communication_window		array					R	RW		
5	randomisation_start_interval		long-unsigned	0				R	RW		
6	number_of_retries		unsigned	0				R	RW		
7	repetition_delay		long-unsigned	0				R	RW		
1	push								W		
	Scheduler - Weekly TLC Report	**22**		**0-2:15.0.4.255**							
1	logical_name		octet-string[6]	00020F0004FF				R	R		
2	executed_script		Script					R	R		
3	Type		Enum					R	R		
4	execution_time		array	Time; Date				R	RW		

Appendix A. Actions for limiters

actions ::= structure
{
    action_over_threshold: action_item,
    action_under_threshold: action_item
}

action_item ::= structure
{
    script_logical_name: octet-string,
    script_selector: long-unsigned
}

Limiter object	Script_logical_name	Script_selector	Description
0-0:17.0.128.255	0-0:0.0.0.0	0	No Action
	0-0:10.0.106.255	1	Close valve
		2	Open valve
	0-0:10.0.10.255	1	Set event “Leak On” (standard)
		2	Set event ”Leak Off” (standard)
	0-0:10.0.11.255	1	Set event “Leak On” + close valve
		2	Set event ”Leak Off” + open valve
0-0:17.0.129.255	0-0:0.0.0.0	0	No Action
	0-0:10.0.106.255	3	Close valve
		4	Open valve
	0-0:10.0.10.255	3	Set event ”Burst On” (standard)
		4	Set event ”Burst Off” (standard)
	0-0:10.0.11.255	3	Set event ”Burst On” + close valve
		4	Set event ”Burst Off” + open valve
0-0:17.0.130.255	0-0:0.0.0.0	0	No Action
	0-0:10.0.106.255	5	Close valve
		6	Open valve
	0-0:10.0.10.255	5	Set event “Reverse On” (standard)
		6	Set event “Reverse Off” (standard)
	0-0:10.0.11.255	5	Set event “Reverse On” + close valve
		6	Set event “Reverse Off” + open valve
0-0:17.0.131.255	0-0:0.0.0.0	0	No Action
	0-0:10.0.10.255	7	Set event “Low water temperature” (standard)
		8	Set event “Water temperature is normal” (standard)
0-0:17.0.132.255	0-0:0.0.0.0	0	No Action
	0-0:10.0.10.255	9	Set event “Battery lifetime is low” (standard)
		10	Set event “Battery lifetime is normal” (standard)

Appendix B. Local Display Configuration

Lcd_config_structure: structure
{
Screen_period : unsigned
Lcd_off_period : unsigned
Screen_config : array
}

Screen_period -
duration of displaying, s (2…255, 0 – infinite duration) - for customer LCD configuration
timeout for service mode, s (1…255, 0 – service mode is disabled) - for service LCD configuration

Lcd_off_period -
duration LCD activity, min (0…255, 0 –infinite activity) - for LCD customer mode configuration
not used - for LCD service mode configuration

Screen_config: structure
{
class_id : Long-unsigned
logical_name : OctetString[6]
attribute_id : Integer
format : Enum
}

Format	on LCD
0	(#)
1	(# . #)
2	(# . # #)
3	(# . # # #)
4	(# #)
5	(# # . #)
6	(# # . # #)
7	(# # . # # #)
8	(# # #)
9	(# # # . #)
10	(# # # . # #)
11	(# # # . # # #)
12	(# # # #)
13	(# # # # . #)
14	(# # # # . # #)
15	(# # # # . # # #)
16	(# # # # #)
17	(# # # # # . #)
18	(# # # # # . # #)
19	(# # # # # . # # #)
20	(# # # # # #)
21	(# # # # # # . #)
22	(# # # # # # . # #)
23	(# # # # # # . # # #)
24	(# # # # # # #)
25	(# # # # # # #. #)
26	(# # # # # # #. # #)
27	(reserved)
28	(# # # # # # # #)
29	(# # # # # # # #. #)
30	(reserved)
31	(reserved)
32	(# # # # # # # # #)
33-255	(reserved)

Appendix C. Compact frame descriptions

Compact Frame – Daily Consumption Report (CF-48):

Object	OBIS	IC	Attr	Type of data
CF48	0-0:66.0.48.255	62	4	unsigned
UNIX time	0-0:1.1.0.255	1	2	double-long-unsigned
PP4 Network Status	0-1:96.5.4.255	1	2	long-unsigned
Disconnect control	0-0:96.3.10.255	70	2	boolean
Disconnect control	0-0:96.3.10.255	70	3	enum
Standart Event Counter	0-0:96.15.0.255	1	2	long-unsigned
Communication Event Counter	0-0:96.15.7.255	1	2	long-unsigned
Daily Diagnostic	8-1:96.5.1.255	1	2	long-unsigned
Current Forward Volume	8-0:4.0.0.255	3	2	double-long-unsigned
Current Reverse Volume	8-0:5.0.0.255	3	2	double-long-unsigned
Hourly Load Profile (last 72 entries)	8-0:99.1.0.255	7	2	array of structures
Management Frame Counter	0-1:43.1.3.255	1	2	double-long-unsigned

Appendix D. DataNotification payload description

Example of DataNotification payload:

0F010000000C07EA0408030D190C00007880020109820 25C3069D63B18000101010135002A0000000001DA000008
E74869D635300000000069D627200000000069D619100000000069D60B000000000069D5FCF00000000069D5EEE0
0000000069D5E0D00000000069D5D2C00000000069D5C4B00000000069D5B6A00000000069D5A8900000000069D
59A800000000069D58C700000000069D57E600000000069D57050000000069D562400000000069D554300000000
069D546200000000069D538100000000069D52A000000000069D51BF00000000069D50DE00000000069D4FFD0000
0000069D4F1C00000000069D4E3B00000000069D4D5A00000000069D4C7900000000069D4B9800000000069D4AB
700000000069D49D600000000069D48F500000000069D481400000000069D473300000000069D465200000000069
D457100000000069D449000000000069D43AF00000000069D42CE00000000069D41ED00000000069D410C0000000
0069D402B00000000069D3F4A00000000069D3E6900000000069D3D8800000000069D3CA700000000069D3BC600
000000069D3AE500000000069D3A0400000000069D392300000000069D384200000000069D376100000000069D36
8000000000069D359F00000000069D34BE00000000069D33DD00000000069D32FC00000000069D321B0000000006
9D313A00000000069D305900000000069D2F7800000000069D2E9700000000069D2DB600000000069D2CD5000000
00069D2BF400000000069D2B1300000000069D2A3200000000069D295100000000069D287000000000069D278F00
000000069D26AE00000000069D25CD00000000069D24EC00000000000000000

Bytes, hex	Description
0F	Data notification service
01000000	Long-invoke-id-and-priority
0C07EA0408030D190C00007880	Date-time (octet_string): 2026-04-08 13:25:12 deviation=120
0201	Notification-Body (structure[1] …)
0982025C	Octet_string[604]
30	Template ID (62, 0-0:66.0.48.255, 4)
69D63B18	Unix time (1, 0-0:1.1.0.255, 2) - Apr 08 2026 11:25:12 GMT+0000
0001	PP4 Network Status (1, 0-1:96.5.4.255, 2)
01	Disconnect control attr2 (70, 0-0:96.3.10.255, 2)
01	Disconnect control attr3 (70, 0-0:96.3.10.255, 3)
0135	Standart Event Counter (1, 0-0:96.15.0.255, 2)
002A	Communication Event Counter (1, 0-0:96.15.7.255, 2)
0000	Daily Diagnostic (1, 8-1:96.5.1.255, 2)
000001DA	Current Forward Volume (3, 8-0:4.0.0.255, 2)
000008E7	Current Reverse Volume (3, 8-0:5.0.0.255, 2)
48	Number entries from LP1 (7, 8-0:99.1.0.255, 2 - last 72)
69D63530 0000 0000	Unix time (Apr 08 2026 11:00:00 GMT+0), forward and reverse consumption
69D62720 0000 0000	Unix time (Apr 08 2026 10:00:00 GMT+0), …
69D61910 0000 0000	Unix time (Apr 08 2026 09:00:00 GMT+0), …
69D60B00 0000 0000	Unix time (Apr 08 2026 08:00:00 GMT+0), …
…	
69D26AE0 0000 0000	Unix time (Apr 05 2026 14:00:00 GMT+0), …
69D25CD0 0000 0000	Unix time (Apr 05 2026 13:00:00 GMT+0), …
69D24EC0 0000 0000	Unix time (Apr 05 2026 12:00:00 GMT+0), …
00000000	Management Frame Counter (1, 0-1:43.1.3.255, 2)