

SIEMENS

**Cerberus® CS60
Gas Detection System**

Interface description
SW Version 5x

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Fire & Security Products

Siemens Building Technologies Group

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Note:

The system owner should be aware that the connection to (or the interaction with) other systems may impair the functionality and reliability of the fire detection and / or security and protection system.

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1 Structure of the CC 60 control unit

1.1 Hardware organization

The control unit comprises up to 56 detectors that can be assigned to any of max. 56 zones. The max. 8 x 32 relays can be activated only via control zones. Like the detectors also the control zones distinguish between the alarm types warning, pre-alarm and gas alarm (subsequently referred to only as "alarm"). For triggering an alarm a certain number of detectors affiliated with the zone must be in the corresponding alarm state. There are also collective alarms and fault relays on the SU60.

The alarm type "alarm" is evaluated subject to the CAC, that is, it triggers a general internal alarm or a remote alarm only after expiration of a safety delay V1 / V2 in accordance with the day/night organization.

1.2 Functional organization of the DMS7000

The control unit is functionally subdivided into sectors which combine certain functions and telegram types.

In the case of the CC60 the following sectors exist:

Basic sector

The basic sector controls the basic functions (network, power source, faults) of the system control unit.

Gas sector

The gas sector comprises all functions related to measurement acquisition and alarm processing.

Plant monitoring sector

The plant monitoring sector supplies data on and monitoring of the control contact states.

2 CC60 behavior in the DMS7000

In the following chapter the CC60 data structures are described in detail. This description is based on the DMS7000 behavior of the corresponding data points.

2.1 Description of the data structures

For each data structure the same description principle is used:

- Quick-reference description
- Valid states
- State transition diagram
- Telegram repertoire

2.1.1 Quick-reference description

Provides information on the intended purpose of a given data structure.

2.1.2 Valid states

Describes the valid states and the principal commands of the corresponding data structure.

- The ACKNOWLEDGE command is generally not listed explicitly and can always be used.
- Initial and follow-on messages are not taken into consideration.

2.1.3 State transition diagram

The state transition diagram shows the valid state transitions.

From	To	State 1	<u>State 2</u>
State 1		---	↓ Event ----- Action
State 2		↓ Event ----- Action	-----

- The Y-axis shows the FROM state. The origination state (state before polling) in the control center is shown underscored.
- The X-axis shows the subsequent (TO) state.
- At the intersection the triggering event and the resulting action are shown.

Notation: Event

 Action

Events are:

- Spontaneous state changes within the control unit.
- Reactions to operator entries on the local terminal.
- Reactions to command telegrams of a control center.

State changes are represented with ↑ (incoming state) or ↓ (outgoing state).

The resulting DMS 7000 telegrams are referred to as actions. An action may comprise one or more telegrams. Only the variable parts *Separator*, *Data A* and *Data B* of a telegram are represented.

Invalid transitions are shown with "---"



Note:

- To conserve space, unacknowledged/acknowledged transitions within a given state are not shown in the diagram.
- Initial and continuation messages are not taken into consideration.
- When the control center is initialized (polling sequence) transitions are possible which according to the diagram are invalid.

2.1.4 Telegram repertoire

The telegram repertoire for *messages* and *commands* is represented in the form of a table.

The fields *Text A* and *Text B* contains the standard texts introduced in the DMS7000 network.

3 BASIC SECTOR "Z"

The Basic sector controls the basic functions (network, power source, faults) of the system control unit. It monitors whether or not the network is interrupted, supply power is no longer ensured, or whether any other elements of the control unit (displays, printer, CPU) are defective.

3.1 Presence

Reports the existence of a control unit or is used in the evaluation units for monitoring the presence of a control unit. The transmission interval can be set in the CS 60 to either 30 s or 60 s. The monitoring interval in the DMS7000 evaluation units can be freely configured.

Also refer to Chapter 3.9 Data line and data network, page 14. (Internal telegram communication).

3.1.1 Valid states

State	Description	Valid commands
NORMAL	The control unit is in operation and able to communicate via the network. It transmits a presence telegram in a specific interval. The "Communication normal" message is generated internally.	
FAULT	The control unit is not in operation or cannot communicate via the network. No presence telegrams are transmitted. A communications fault is generated internally.	ACKNOWLEDGE (locally)

3.1.2 State transition diagram

To From	NORMAL	FAULT	
NORMAL	<p>↑ Timeout expired (Default: 30 s)</p> <p>-----</p> <p>M 39 00</p>	<p><u>IN CC60:</u> ↑ Communication not possible</p> <p>-----</p> <p>NO M 39 00 * Generate Internal communications fault</p>	<p><u>IM Evaluation unit:</u> ↑ absent (Presence telegram or other telegram of the corresponding control unit missing)</p> <p>-----</p> <p>----- Generate communications fault (internal: M 44 46)</p>
FAULT	<p><u>IN CC60:</u> ↑ Communication possible</p> <p>-----</p> <p>M 39 00 * Cancel Internal communications fault</p>	<p><u>IM Evaluation unit:</u> ↑ present (Presence telegram or other telegram received from the corresponding control unit)</p> <p>-----</p> <p>----- Cancel communications fault (internal: M 44 3C)</p>	---

* Presence telegram of other telegram.

3.1.3 Telegram repertoire

Messages

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CZaddr>	00 / 00	M	39	00	Presence	

3.2 General fault

3.2.1 Valid states

State	Description	Valid commands
NORMAL	No fault, not in polling mode. Power source not in battery mode	
FAULT general	General control unit fault	Acknowledgment

3.2.2 State transition diagram

From	To	FAULT	Fault general
FAULT		---	<u>↑ Fault</u> ----- M 3A 3B
Fault general		<u>↓ End</u> ----- M 3A 3B	<u>↑ Acknowledgment</u> ----- M 3A 88

3.2.3 Telegram repertoire

Command

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00 / 00	R	3A	86	Fault	Acknowledgment

Messages

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00 / 00	M	3A	3A	Fault	
Z	<CSaddr>	00 / 00	M	3A	88	Fault	Acknowledged
Z	<CSaddr>	00 / 00	M	3A	3B	Fault	End

3.3 Network fault

3.3.1 Valid states

State	Description	Valid commands
NORMAL	No fault, not in polling mode, power supply not in battery mode.	
NETWORK FAULT	Data network fault.	Acknowledgment

3.3.2 State transition diagram

From	To	NORMAL	NETWORK FAULT
NORMAL		---	<u>↑ Fault</u> ----- M 38 46
NETWORK FAULT		<u>↓ End</u> ----- M 3A 3B	<u>Acknowledgment</u> ----- M 38 88

3.3.3 Telegram repertoire

Command

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00 / 00	R	38	86	Data network	Acknowledgment

Messages

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00 / 00	M	38	46	Data network	Faulty
Z	<CSaddr>	00 / 00	M	38	88	Data network	Acknowledged
Z	<CSaddr>	00 / 00	M	38	3C	Data network	Normal operation

3.4 Terminal faults

3.4.1 Valid states

State	Description	Valid commands
NORMAL	No faults, not in polling mode. Power supply not in battery mode.	
TERMINAL FAULT	Terminal fault.	

3.4.2 State transition diagram

	To	NORMAL	TERMINAL FAULT
From			
NORMAL		---	<u>↑ Fault</u> ----- Q 4C 46
TERMINAL FAULT		<u>↓ End</u> ----- M 4C 3C	---

3.4.3 Telegram repertoire

Command (none)

Sector	DMS Adr	A1	A2	Sep	Data A	Data B	Text A	Text B

Messages

Sector	DMS Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00	02 ... 03	Q	4C	46	Terminal	Faulty
Z	<CSaddr>	00	02 ... 03	M	4C	3C	Terminal	Normal operation

3.5 Power source fault

3.5.1 Valid states

State	Description	Valid commands
NORMAL	No fault, not in polling mode. Power source not in battery mode	
POWER SOURCE FAULT	Power source fault, for example, asymmetry of the batteries, battery voltage too low, defective fuse in mains operation.	Acknowledgment

3.5.2 State transition diagram

To	NORMAL	POWER SOURCE FAULT
From		
NORMAL	---	<u>↑ Fault</u> ----- M 3C 46
POWER SOURCE FAULT	<u>↓ End</u> ----- M 3C 3C	<u>Acknowledgment</u> ----- M 3C 88

3.5.3 Telegram repertoire

Commands

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00 / 00	R	3C	86	Power source	Acknowledgment (Battery mode)

Messages

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00 / 00	M	3C	46	Power source	Faulty
Z	<CSaddr>	00 / 00	M	3C	88	Power source	Acknowledged
Z	<CSaddr>	00 / 00	M	3C	3C	Power source	Normal operation

3.6 Battery mode fault

3.6.1 Valid states

State	Description	Valid commands
NORMAL	No fault, not in polling mode. Power supply not in battery mode	
BATTERY MODE	Power supply in battery mode	Acknowledgment

3.6.2 State transition diagram

From	To	NORMAL	BATTERY MODE
NORMAL		---	<u>↑ Battery mode</u> ----- M 3C 3D
BATTERY MODE		<u>↓ Normal operation</u> ----- M 3C 3C	<u>Acknowledgment</u> M 3C 88

3.6.3 Telegram repertoire

Commands

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00 / 00	R	3C	86	Power source	Acknowledgment (Battery mode)

Messages

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CSaddr>	00 / 00	M	3C	3D	Power source	Battery mode
Z	<CSaddr>	00 / 00	M	3C	88	Power source	Acknowledged
Z	<CSaddr>	00 / 00	M	3C	3C	Power source	Normal operation

3.7 Service port :

3.7.1 Valid states

State	Description	Valid commands
Normal	No fault, not in polling mode. Power supply not in battery mode.	
Service port active	Service port has been activated.	

3.7.2 State transition diagram

from	to	NORMAL (inactive)	SERVICE PORT ACTIVE
NORMAL (inactive)			<u>↑ Active</u> Q 76 4F
SERVICE PORT ACTIVE		<u>↑ Inactive</u> (-) M 76 4D	

3.7.3 Telegram repertoire

Commands : none

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
Z	yyy	00	04	Q	76	4F	Service port	Active
Z	yyy	00	04	M	76	4D	Service port	Inactive

3.8 Data polling



Note: After the data have been transmitted the control unit returns automatically to the normal state.

3.8.1 Valid states

State	Description	Valid commands
Normal	No fault, not in polling mode. Power supply not in battery mode.	Polling ON
Polling ON	DMS polls control unit state	Start polling

3.8.2 State transition diagram

	to	NORMAL	POLLING ON
from			
NORMAL			↑ Polling ON M 53 3A
POLLING ON		↑ Start polling Data M 53 3B	

3.8.3 Telegram repertoire

Commands :

Sector	Adr	A1/A2	A2	Sep	Data A	Data B	Text A	Text B
Z	yyy	00	00	R	53	55	Polling	On
Z	yyy	00	00	R	53	52	Polling	Execute

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
Z	yyy	00	00	M	53	3A	Polling	
Z	yyy	00	00	M	53	3B	Polling	End

3.9 Data line and data network

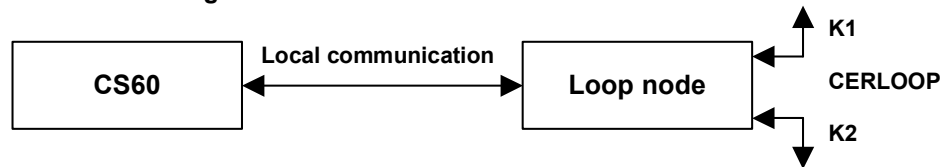
With CERLOOP: For mapping the state of the data line to the local loop node (so-called “local interface”, as well as the data lines K1 and K2 from the local loop node to the CERLOOP network. If in the CERLOOP network only one side of the link is interrupted, this node is visible, otherwise (K1 and K2 faulty) a data line fault is generated because no communication is possible. However, local operation is still feasible.

With CERBAN: For mapping the state of the data line to the CERBAN network. As no communication is possible in this case, an internal data line fault is generated that can be operated only locally.

See also Chapter 3.1 Presence, page 6.

Virtual address DMS devices: ADF1/2: 00 / 08

CERLOOP configuration



CERBAN configuration



3.9.1 Valid states

State	Description	Valid commands
NORMAL	The control unit is in operation and can communicate via the network. K1 and K2 are available. Presence telegrams are transmitted.	
FAULT K1 OR K2 NOT AVAILABLE (CERLOOP)	The control unit can communicate in the network via K1 or K2. K2 or K1 is NOT available. Presence telegrams are transmitted.	ACKNOWLEDGE
FAULT	The control unit cannot communicate via the network. No presence telegrams are transmitted. Internally a communications fault is generated. Possible causes: - CERLOOP: - “Local interface” fault, or - K1 and K2 faulty/not available - CERBAN : - Interface faulty	ACKNOWLEDGE (locally)

3.9.2 State transition diagram

To	FAULT	FAULT K1 OR K2 NOT AVAILABLE	NORMAL
From FAULT	---	↑ Communication via K1 or K2 possible ----- Cancel internal communication fault (internal : M 44 3C) M 38 46 Activate presence telegram transmitter (M 39 00)	↑ Communication possible ----- Cancel internal communication fault (internal: M 44 3C) M 38 3C Activate presence telegram transmitter (M 39 00)
FAULT K1 OR K2 NOT AVAILABLE	↑ Communication not possible ----- Generate internal communications fault (intern: M 44 46) Deactivate presence telegram transmitter.	---	↑ Communication possible ----- M 38 3C
<u>NORMAL</u>	↑ Communication not possible ----- Generate internal communications fault (intern: M 44 46) Deactivate presence telegram transmitter.	↑ Communication possible ONLY via K1 or K2 ----- M 38 46	---

Internal = internal to the individual DMS7000 devices / no telegram transmission.

3.9.3 Telegram repertoire

Messages (only internal/local generation in the individual DMS7000 devices)

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CZaddr>	00 / 00	M	44	46	Data line	Faulty
Z	<CZaddr>	00 / 00	M	44	3C	Data line	Normal operation

Messages

Sector	DMS Adr	ADF1/2	Sep	Data A	Data B	Text A	Text B
Z	<CZaddr>	00 / 00	M	38	46	Data network	Faulty
Z	<CZaddr>	00 / 00	M	38	3C	Data network	Normal operation

4 GAS SECTOR "G"

The gas sector comprises all functions related to measurement data acquisition and alarm processing. In particular also the state of the detectors is checked there (fault, test).

4.1 GAS sector : General

4.1.1 Data polling



Note:

After the data have been transmitted the control unit switches automatically to the normal state.

Valid states

State	Description	Valid commands
Normal	All devices in normal operation, not in polling or test mode; no alarms active	Polling ON
Polling ON	Polls the state of the control unit and its devices.	Start polling

State transition diagram

from	to	NORMAL	POLLING ON
NORMAL			↑ Polling ON M 53 3A
POLLING ON		↓ Start polling Data M 53 3B	

Telegram repertoire

Commands :

Sector	Adr	A1/A2	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	00	00	R	53	55	Polling	ON
G	yyy	00	00	R	53	52	Polling	Start

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	00	00	M	53	3A	Polling	
G	yyy	00	00	M	53	3B	Polling	End

4.1.2 General fault

Valid states:

State	Description	Valid commands
Normal	All devices in normal operation, not in polling or test mode; no alarms active	
Gen. fault	Occurrence of a fault in the control unit or a device	Acknowledgment

State transition diagram

from	to	NORMAL	FAULT
NORMAL			<u>↑ Fault</u> M 3A 3A
FAULT		<u>↓ End</u> M 3A 3B	<u>Acknowledge</u> M 3A 88

Telegram repertoire

Commands :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	D1	ED	R	3A	86	Fault	Acknowledgment

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	D1	ED	M	3A	3A	Fault	
G	yyy	D1	ED	M	3A	88	Fault	Acknowledged
G	yyy	D1	ED	M	3A	3B	Fault	End

4.1.3 Detection devices

Valid states

State	Description	Valid commands
Normal	All devices in normal operation, not in polling or test mode; no alarms active	
Detection device off	Detection devices are switched off or in test mode	Detection device on

State transition diagram

from	to	NORMAL	DETECTION DEVICE OFF
NORMAL			↑ <u>Detection device OFF</u> Q 63 3A
DETECTION DEVICE OFF		↓ <u>Detection device ON</u> M 63 3B	

Telegram repertoire

Commands :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	R	67	55	Detection device (FE / number)	On

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	D1	EC	Q	63	3A	Detection device	Off
G	yyy	D1	EC	M	63	3B	Detection device off	End

4.2 Gas sector : Test mode

The event "Test Off" includes also "Simulation Off"; it is initiated on the CC60 control unit.

Valid states

State	Description	Valid commands
Normal	No detector in test mode, no alarms	Test, Test on
Test	Test mode (triggers "Detection device off")	
T-Warning	Warning in test mode initiated	
T-Pre-alarm	Pre-alarm in test mode initiated	
T-Alarm	Alarm in test mode initiated	

State transition diagram

to from	NORMAL	TEST	TEST WARNING	TEST PRE-ALARM	TEST ALARM
NORMAL		↑ Test On ¹⁾ Q 67 57			
TEST	↓ Test Off ²⁾ M 67 3C		↑ T-Warning On ²⁾ Q 67 20	↑ T-Pre-alarm On ²⁾ Q 67 21	↑ T-Alarm On ²⁾ Q 67 22
TEST WARNING		↓ T-Warning Off ²⁾ Q 67 57		↑ T-Pre-alarm On ²⁾ Q 67 21	↑ T-Alarm On ²⁾ Q 67 22
TEST PRE-ALARM			↓ T-Pre-alarm Off ²⁾ Q 67 20		↑ T-Alarm On ²⁾ Q 67 22
TEST ALARM				↓ T-Alarm Off ²⁾ Q 67 21	

1) The "Test On" event comprises the two commands "Test" and "Test On"

2) These events are initiated directly by the control unit

Telegram repertoire

Commands :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	R	67	57	Detection device (FE / number)	Test
G	yyy	01....04	01....14	R	67	55	Detection device (FE / number)	Test On

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	Q	67	57	Detection device (FE / number)	Test
G	yyy	01....04	01....14	Q	67	20	Detection device (FE / number)	Test warning
G	yyy	01....04	01....14	Q	67	21	Detection device (FE / number)	Test pre-alarm
G	yyy	01....04	01....14	Q	67	22	Detection device (FE / number)	Test gas alarm
G	yyy	01....04	01....14	M	67	3C	Detection device (FE / number)	Normal operation

4.3 Gas sector : Detection devices

Valid states

State	Description	Valid commands
Normal	Test mode not active. No detection devices active. Detection devices are switched on	Detection device Off
Fault	Fault activated by detection device	Acknowledgment
Off	Detection device is switched off	Detection device On
Overhaul	(Re-) Calibration of a detector enabled on system control unit	

State transition diagram

from	to	NORMAL	FAULT	OFF	REVISION
NORMAL			<u>↑ Fault</u> M 67 46	<u>↑ Off</u> Q 67 56	<u>↑ Detector switched to calibrations state</u> Q 51 3A
FAULT		<u>↓ End</u> M 67 3C	<u>Acknowledgment</u> M 67 88		
OFF		<u>↓ On</u> M67 3C	<u>↑ Fault</u> M 67 46		
OVERHAUL		<u>↓ Calibration terminated</u> M 51 3B			

The calibration state is activated on the system control unit !

Telegram repertoire

Commands :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	R	67	56	Detection device (FE / number)	Off
G	yyy	01....04	01....14	R	67	55	Detection device (FE / number)	On
G	yyy	01....04	01....14	R	67	86	Detection device (FE / number)	Acknowledgment

Messages :

S	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	Q	67	56	Detection device (FE / number)	Off
G	yyy	01....04	01....14	M	67	46	Detection device (FE / number)	Faulty
G	yyy	01....04	01....14	M	67	88	Detection device (FE / number)	Acknowledged
G	yyy	01....04	01....14	M	67	3C	Detection device (FE / number)	Normal operation

4.4 Gas sector : Day / Night organization

The day organization influences the CAC. When an alarm occurs in "DAY" mode (without acknowledgment, possible fault remedy and reset) a general internal alarm is initiated after expiration of V2, whereas in day mode V2 is set to zero after expiration of V1 and a remote alarm is initiated.

Valid states

State	Description	Valid commands
Day organization	After expiration of the CAC a general internal alarm is initiated	On (Night)
Night organization	After expiration of the CAC a remote alarm is initiated	Off (Day)

State transition diagram

from	to	DAY	NIGHT
DAY			<u>↑ On</u> M 55 60
NIGHT		<u>↓ Off</u> M 55 61	

Telegram repertoire

Commands :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	00	EF	R	55	55	Organization	On (Night)
G	yyy	00	EF	R	55	56	Organization	Off (Day)

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	00	EF	M	55	60	Organization	Night
G	yyy	00	EF	M	55	61	Organization	Day

4.5 Gas sector : Alarms

4.5.1 Alarms (ZONES)

Valid states

State	Description	Valid commands
Normal	No alarms active	
Warning	Detector or zone warning active	Acknowledge Reset
Pre-alarm	Detector or zone pre-alarm active	Acknowledge Reset
Alarm	Detector or zone alarm active	Acknowledge Message Reset
General internal alarm	Outgoing alarm in day mode	Acknowledge Reset
Remote alarm	Outgoing alarm in night mode	Acknowledge Reset

State transition diagram

from to	NORMAL	WARNING	PRE-ALARM	ALARM	REMOTE ALARM	GEN. INTERNAL ALARM
NORMAL		<u>↑ Warning</u> U 03 00				
WARNING	<u>↓ Reset</u> M 00 85	<u>Acknowledgment</u> Q 03 00	<u>↑ Pre-alarm</u> U 04 00			
PRE-ALARM	<u>↓ Reset</u> M 00 85		<u>Acknowledgment</u> Q 04 00	<u>↑ Alarm</u> U 07 00		
ALARM	<u>↓ Reset</u> M 00 85			<u>Acknowledgment</u> Q 07 00	<u>↑ Expiration V2</u> U 09 4F (Night)	<u>↑ Expiration V2</u> U 06 00 (Day)
REMOTE ALARM	<u>↓ Reset</u> <u>Acknowledgment</u> M 09 4D (Night)					
GEN. INTERNAL ALARM	<u>↓ Reset</u> M 06 85 (Day)					<u>Acknowledgment</u> Q 06 00

Telegram repertoire

Commands :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	D1	01....56	R	03	80	Warning	Alarm acknowledgment
G	yyy	D1	01....56	R	03	83	Warning	Alarm reset
G	yyy	D1	01....56	R	04	80	Pre-alarm	Alarm acknowledgment
G	yyy	D1	01....56	R	04	83	Pre-alarm	Alarm reset
G	yyy	D1	01....56	R	07	80	Gas alarm Zone	Alarm acknowledgment
G	yyy	D1	CD	R	00	80	Message	Alarm acknowledgment
G	yyy	D1	CD	R	06	80	General internal alarm	Alarm acknowledgment
G	yyy	00	EA	R	09	89	Remote alarm	Acknowledgment
G	yyy	D1	01....56	R	07	83		Alarm reset

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	D1	01....56	U	03	00	Warning	Autom. detector
G	yyy	D1	01....56	Q	03	00	Warning	Autom. detector acknowledged
G	yyy	D1	01....56	M	03	85	Warning	Reset
G	yyy	D1	01....56	U	04	00	Pre-alarm	Autom. detector
G	yyy	D1	01....56	Q	04	1)	Pre-alarm	Autom. detector acknowledged
G	yyy	D1	01....56	M	04	85	Pre-alarm	Reset
G	yyy	D1	01....56	U	07	00	Gas alarm Zone	
G	yyy	D1	CD	U	00	81	General internal alarm impending (Day)	
G	yyy	D1	CD	U	06	00	General internal alarm	
G	yyy	00	EA	U	09	4F	Remote alarm	Active
G	yyy	D1	01....56	Q	07	00	Gas alarm	Autom. detector acknowledged
G	yyy	D1	CD	M	06	85	General internal alarm	Reset
G	yyy	D1	CD	Q	00	81	General internal alarm impending	Acknowledged
G	yyy	D1	CD	Q	06	00	General internal alarm	Acknowledged
G	yyy	00	EA	Q	09	4F	Remote alarm	Acknowledged
G	yyy	00	EA	M	09	4D	Remote alarm	Inactive
G	yyy	D1	01....56	M	07	85		Reset
G	yyy	D1	CD	M	06	85	General internal alarm	Reset
G	yyy	D1	01....56	M	00	85		Alarm reset

Data block b : 1) 01 Autom. Detector
02 Manual call point

4.5.2 Alarms (DETECTOR)

Valid states

State	Description	Valid commands
Normal	No alarms active	
Warning	Detector or zone warning active	Acknowledge Reset
Pre-alarm	Detector or zone pre-alarm active	Acknowledge Reset
Alarm	Detector or zone alarm active	Acknowledge Message Reset

State transition diagram

from	to	NORMAL	WARNING	PRE-ALARM	ALARM
NORMAL			<u>↑ Warning</u> Q 03 01		
WARNING		<u>↑ Reset</u> M 00 85	<u>Acknowledgment</u> Q 03 01	<u>↑ Pre-alarm</u> Q 04 01	
PRE-ALARM		<u>↓ Reset</u> M 00 85		<u>Acknowledgment</u> Q 04 01	<u>↑ Alarm</u> Q 07 01
ALARM		<u>↓ Reset</u> M 00 85			<u>Acknowledgment</u> Q 07 01

Telegram repertoire

Commands :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	R	03	80	Warning	Alarm acknowledgment
G	yyy	01....04	01....14	R	04	80	Pre-alarm	Alarm acknowledgment
G	yyy	01....04	01....14	R	07	80	Gas alarm	Alarm acknowledgment
G	yyy	01....04	01....14	R	03	83	Warning	Alarm reset
G	yyy	01....04	01....14	R	04	83	Pre-alarm	Alarm reset
G	yyy	01....04	01....14	R	07	83	Gas alarm	Alarm reset

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	U	03	01	Warning	Autom. detector
G	yyy	01....04	01....14	Q	03	01	Warning	Autom. detector (acknowledged)
G	yyy	01....04	01....14	U	04	01	Pre-alarm	Autom. detector
G	yyy	01....04	01....14	Q	04	01	Pre-alarm	Autom. detector (acknowledged)
G	yyy	01....04	01....14	Q	07	1)	Gas alarm	Autom. detector (acknowledged)
G	yyy	01....04	01....14	M	00	85		Alarm reset

Data block b : 1) 01 Autom. detector
02 Manual call point

5 PLANT MONITORING SECTOR "P"

The plant monitoring sector supplies information on and allows control of the control contact states. The term "Fault" comprises also malfunctions of the Cerberus bus and relay boards.

5.1 PANT MONITORING sector: Control contact

Valid states

State	Description	Valid commands
Normal	No faults and no control contacts active. Not in polling mode.	Polling on Control contact active
Polling	Polling mode for process image	Start
Fault	Fault of SU60, relay and analog boards	Acknowledgment
Fault control contact	Control contact fault	Acknowledgment
Control contact active	Control contacts are activated	Control contact inactive

State transition diagram

from	to	NORMAL	POLLING	FAULT	CONTROL CONTACT FAULT	CONTROL CONTACT ACTIVE
NORMAL			<u>↑ Polling ON</u> M 53 3A	<u>↑ Fault</u> M 3A 3A	<u>↑ Contact fault</u> M 61 46	<u>↑ Control contact active</u> Q 61 4F
POLLING		<u>↓ Start</u> Data... M 53 3B				
FAULT		<u>↓ End</u> M 3A 3B		<u>Acknowledgment</u> M 3A 88		
CONTROL CONTACT FAULT		<u>↓ Normal operation</u> M 61 3C			<u>Acknowledgment</u> M 61 88	
CONTROL CONTACT ACTIVE		<u>↓ Control contact inactive</u> M 61 4D				

Telegram repertoire

Commands :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
P	yyy	00	00	R	53	55	Polling	On
P	yyy	00	00	R	53	52	Polling	Start
P	yyy	E1	ED	R	3A	86	Fault	Acknowledgment
P	yyy	12....19	01....16	R	61	86	Control contact (bus / relay)	Acknowledgment
P	yyy	12....19	01....16	R	61	4F	Control contact (bus / relay)	Active
P	yyy	12....19	01....16	R	61	4D	Control contact (bus / relay)	Inactive

Messages :

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
P	yyy	00	00	M	53	3A	Polling	
P	yyy	00	00	M	53	3B	Polling	End
P	yyy	E1	ED	M	3A	3A	Fault	
P	yyy	E1	ED	M	3A	88	Fault	Acknowledged
P	yyy	E1	ED	M	3A	3B	Fault	End
P	yyy	12....19	01....16	M	61	46	Control contact (bus / relay)	Faulty
P	yyy	12....19	01....16	M	61	88	Control contact (bus / relay)	Acknowledged
P	yyy	12....19	01....16	M	61	3C	Control contact (bus / relay)	Normal operation
P	yyy	12....19	01....16	Q	61	4F	Control contact (bus / relay)	Active
P	yyy	12....19	01....16	M	61	4D	Control contact (bus / relay)	Inactive

6 CS60 clock synchronization via time telegram

The clocks of the subsystems connected to a DMS7000 network can be synchronized by means of a time telegram.

The internal clock of the CS60 is set via the time telegram if this function has been correspondingly configured.

Seconds are used for setting the clocks only if they have a value between 0 and 59. If the telegram contains the day of the week (61 .. 67) the seconds of the internal clock are set to 0.

Example:

Control center	Telegram	CS60
Control center transmits a time telegram in intervals of 10 minutes (default)	T210995143561 →	CS60 receives the time telegram and synchronizes the clock to the following values: Date: 21.09.95 Time : 14:35:00 Day of week : not changed

7 Telegram list

7.1 BASIC sector

7.1.1 Control unit state messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
Z	yyy	00	00	M	39	00	Presence	
Z	yyy	00	00	M	53	3A	Polling	
Z	yyy	00	00	M	53	3B	Polling	End
Z	yyy	00	00	M	3A	88	Fault	Acknowledged
Z	yyy	00	00	M	3A	3B	Fault	End
Z	yyy	00	00	M	38	88	Data network	Acknowledged
Z	yyy	00	00	M	38	3C	Data network	Normal operation
Z	yyy	00	00	M	3C	88	Power source	Acknowledged
Z	yyy	00	00	M	3C	3C	Power source	Normal operation
Z	yyy	00	00	M	3C	3D	Power source	Battery mode
Z	yyy	00	02....03	M	4C	3C	Terminal	Normal operation
Z	yyy	00	04	Q	76	4F	Service port	Active
Z	yyy	00	04	M	76	4D	Service port	Inactive

7.1.2 Acknowledgeable state messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
Z	yyy	00	00	M	3A	3A	Fault	
Z	yyy	00	00	M	38	46	Data network	Faulty
Z	yyy	00	00	M	3C	46	Power source	Faulty
Z	yyy	00	02....03	Q	4C	46	Terminal	Faulty

7.1.3 Commands

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
Z	yyy	00	00	R	53	55	Polling	On
Z	yyy	00	00	R	53	52	Polling	Start
Z	yyy	00	00	R	3A	86	Fault	Acknowledgment
Z	yyy	00	00	R	38	86	Data network	Acknowledgment
Z	yyy	00	00	R	3C	86	Power source	Acknowledgment
Z	yyy	00	00	R	3C	86	Power source	Acknowledgment

7.2 Sector GAS

7.2.1 General messages

General state messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	00	00	M	53	3A	Polling	
G	yyy	00	00	M	53	3B	Polling	End
G	yyy	D1	ED	M	3A	88	Fault	Acknowledged
G	yyy	D1	ED	M	3A	3B	Fault	End
G	yyy	D1	EC	Q	63	3A	Detection device	Off
G	yyy	D1	EC	M	63	3B	Detection device	End

Acknowledgeable state messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	D1	ED	M	3A	3A	Fault	

Commands

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	00	00	R	53	55	Polling	On
G	yyy	00	00	R	53	52	Polling	Start
G	yyy	D1	ED	R	3A	86	Fault	Acknowledgment

7.2.2 Test mode messages

Test mode state messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text b
G	yyy	01....04	01....14	Q	67	57	Detection device (FE / number)	Test
G	yyy	01....04	01....14	Q	67	20	Detection device (FE / number)	Test warning
G	yyy	01....04	01....14	Q	67	21	Detection device (FE / number)	Test pre-alarm
G	yyy	01....04	01....14	Q	67	22	Detection device (FE / number)	Test gas alarm
G	yyy	01....04	01....14	M	67	3C	Detection device (FE / number)	Normal operation

Commands

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	R	67	57	Detection device (FE / number)	Test
G	yyy	01....04	01....14	R	67	55	Detection device (FE / number)	On

7.2.3 Detection device messages

Detection device state messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	Q	67	56	Detection device (FE / number)	Off
G	yyy	01....04	01....14	M	67	88	Detection device (FE / number)	Acknowledged
G	yyy	01....04	01....14	Q	51	3A	Overhauls detection device (FE / number)	
G	yyy	01....04	01....14	M	51	3B	Revision Detection device (FE / number)	End
G	yyy	01....04	01....14	M	67	3C	Detection device (FE / number)	Normal operation

Acknowledgeable messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	M	67	46	Detection device(FE / number)	Faulty

Commands

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	01....04	01....14	R	67	56	Detection device (FE / number)	Off
G	yyy	01....04	01....14	R	67	55	Detection device (FE / number)	On
G	yyy	01....04	01....14	R	67	86	Detection device (FE / number)	Acknowledgment

7.2.4 Organization mode messages

State messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	00	EF	M	55	60	Organization	Night
G	yyy	00	EF	M	55	61	Organization	Day

Commands

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	00	EF	R	55	55	Organization	On (Night)
G	yyy	00	EF	R	55	56	Organization	Off (Day)

7.2.5 Alarm messages

Various telegrams [numbered 1)..4] in fields A1,A2,b] apply to zones as well as detectors. In the locations identified with 1)..4) appropriate data must be ended (s. end of telegram table).

State messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	3)	4)	Q	03	1)	Warning	Autom. detector acknowledged
G	yyy	3)	4)	Q	04	1)	Pre-alarm	Autom. detector acknowledged
G	yyy	3)	4)	Q	07	2)	Gas alarm	Autom. detector acknowledged
G	yyy	3)	4)	M	00	85	Detection device (Warning, pre-alarm, alarm)	Reset
G	yyy	D1	CD	Q	00	81	General internal alarm impending	Acknowledged
G	yyy	D1	CD	Q	06	00	General internal alarm	Acknowledged
G	yyy	D1	CD	M	06	85	General internal alarm	Reset
G	yyy	00	EA	Q	09	4F	Remote alarm	Acknowledged

Data block b :

1) 00 Zone
01 Autom. detector

2) 00 Zone
01 Autom. Detector
02 Manual call point

Address fields A1, A2 :

3) D1 if zone
01..04 if detector (display element 01..04)

4) 01..56 if zone (zone number 01..56)
01..14 if detector (detector number 01..14 on FE)

Acknowledgeable messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	3)	4)	U	03	1)	Warning	Autom. detector
G	yyy	3)	4)	U	04	1)	Pre-alarm	Autom. detector
G	yyy	D1	01...56	U	07	00	Gas alarm zone	
G	yyy	D1	CD	U	00	81	General internal alarm impending (Day)	
G	yyy	D1	CD	U	06	00	General internal alarm	
G	yyy	00	EA	U	09	4F	Remote alarm	Active

Data block b :

1) 00 Zone
01 Autom. detector

2) 00 Zone
01 Autom. Detector
02 Manual call point

Address fields A1, A2 :

3) D1 if zone
01..04 if detector (display element 01..04)

4) 01..56 if zone (zone number 01..56)
01..14 if detector (detector number 01..14 on FE)

Commands

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
G	yyy	3)	4)	R	03	80	Warning	Alarm Acknowledgment
G	yyy	3)	4)	R	03	83	Warning	Alarm Reset
G	yyy	3)	4)	R	04	80	Pre-alarm	Alarm Acknowledgment
G	yyy	3)	4)	R	04	83	Pre-alarm	Alarm Reset
G	yyy	D1	01....56	R	07	80	Gas alarm Zone	Alarm Acknowledgment
G	yyy	3)	4)	R	07	83		Alarm Reset
G	yyy	D1	CD	R	00	80	Message	Alarm Acknowledgment
G	yyy	D1	CD	R	06	80	General internal alarm	Alarm Acknowledgment
G	yyy	00	EA	R	09	89	Remote alarm	Acknowledgment

Address fields A1, A2 :

3) D1 if zone
01..04 if detector (display element 01..04)

4) 01..56 if zone (zone number 01..56)
01..14 if detector (detector number 01..14 on FE)

7.3 PLANT MONITORING sector

7.3.1 State messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
P	yyy	00	00	M	53	3A	Polling	
P	yyy	00	00	M	53	3B	Polling	End
P	yyy	E1	ED	M	3A	88	Fault	Acknowledged
P	yyy	E1	ED	M	3A	3B	Fault	End
P	yyy	12....19	01....16	M	61	88	Control contact (bus / relay)	Acknowledged
P	yyy	12....19	01....16	M	61	3C	Control contact (bus / relay)	Normal operation
P	yyy	12....19	01....16	Q	61	4F	Control contact (bus / relay)	Active
P	yyy	12....19	01....16	M	61	4D	Control contact (bus / relay)	Inactive

7.3.2 Acknowledgable messages

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
P	yyy	E1	ED	M	3A	3A	Fault	
P	yyy	12....19	01....16	M	61	46	Control contact (bus / relay)	Faulty

7.3.3 Commands

Sector	Adr	A1	A2	Sep	Data A	Data B	Text A	Text B
P	yyy	00	00	R	53	55	Polling	On
P	yyy	00	00	R	53	52	Polling	Start
P	yyy	E1	ED	R	3A	86	Fault	Acknowledgment
P	yyy	12....19	01....16	R	61	86	Control contact (bus / relay)	Acknowledgment
P	yyy	12....19	01....16	R	61	4F	Control contact (bus / relay)	Active
P	yyy	12....19	01....16	R	61	4D	Control contact (bus / relay)	Inactive

7.4 Time telegram

7.4.1 Telegram

S	Day	Month	Year	Hours	Minutes	Seconds or day of week
T	DD	MM	YY	HH	MM	SS

Day of week: 61..67 (Mo. .. Su.)

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