

# SIEMENS

## SICAM 1703

## IEC 60870-5-102

### Interoperability

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Preface, Table of Contents

---

Introduction

1

---

Interoperability of SICAM 1703 according  
IEC 60870-5-102 using 102MA0 (Master)

---

2

---

Interoperability of SICAM 1703 according  
IEC 60870-5-102 using 102SA9 (Slave)

---

3

---

Literature

---

**Disclaimer of Liability**

Although we have carefully checked the contents of this publication for conformity with the hardware and software described, we cannot guarantee complete conformity since errors cannot be excluded. The information provided in this manual is checked at regular intervals and any corrections that might become necessary are included in the next releases. Any suggestions for improvement are welcome.

Subject to change without prior notice.

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# Preface

**This document is applicable to the following product(s):**

- SICAM 1703 (ACP 1703)

**Purpose of this manual**

This manual describes the interoperability of SICAM 1703 using protocol element according to IEC 60870-5-102 and essentially contains

- Interoperability IEC 60870-5-102

**Target Group**

The document you are reading right now is addressed to users, who are in charge of the following tasks:

- Sales engineering and technical clarification
- Conceptual activities, as for example design and configuration



# Table of Contents

<b>1.</b>	<b>Introduction .....</b>	<b>7</b>
1.1.	Area of Application .....	8
1.2.	General Information.....	8
<b>2.</b>	<b>Interoperability of SICAM 1703 according IEC 60870-5-102 using 102MA0 (Master) ..</b>	<b>9</b>
2.1.	Network configuration (network-specific parameter).....	11
2.2.	Physical layer (network-specific parameter) .....	12
2.3.	Link Layer (network-specific parameter) .....	13
2.4.	Application layer .....	14
2.5.	Basic application functions .....	18
<b>3.</b>	<b>Interoperability of SICAM 1703 according IEC 60870-5-102 using 102SA9 (Slave) ..</b>	<b>19</b>
3.1.	Network configuration (network-specific parameter).....	21
3.2.	Physical layer (network-specific parameter) .....	22
3.3.	Link Layer (network-specific parameter) .....	23
3.4.	Application layer .....	24
3.5.	Basic application functions .....	28



# 1. Introduction

## Contents

1.1.	Area of Application .....	8
1.2.	General Information.....	8

## 1.1. Area of Application

This manual describes the interoperability of SICAM 1703 required for communication of SICAM 1703 and integrated total DTE using IEC 60870-5-102 communication protocol.

## 1.2. General Information

Syntax:

- Function or ASDU is not used
- Function or ASDU is used as standardized (default)
- Function or ASDU is used in reverse mode
- Function or ASDU is used in standard and reverse mode
  
- Function or ASDU is planned, please contact the product management
  
- Function or ASDU is used in a specific project

~~strike through~~ the text descriptions of parameters which are not applicable to this companion standard

Protocol elements supporting IEC 60870-5-102:

**102MA0** Standard protocol element for communication according IEC 60870-5-102 with multipoint configuration for the link between SICAM 1703 as controlling station and integrated total DTE.

System element for multipoint master (102MA0):  
SM-2551/102MA0  
SM-0551/102MA0

**102SA9** Protocol element (project specific) for communication according IEC 60870-5-102 with multipoint configuration for the link between SICAM 1703 as controlling station and integrated total DTE.

System element for multipoint slave (102SA9):  
SM-2551/102SA9  
SM-0551/102SA9



## **2. Interoperability of SICAM 1703 according IEC 60870-5-102 using 102MA0 (Master)**

### **Contents**

2.1.	Network configuration (network-specific parameter).....	11
2.2.	Physical layer (network-specific parameter) .....	12
2.3.	Link Layer (network-specific parameter) .....	13
2.4.	Application layer .....	14
2.5.	Basic application functions .....	18

## Interoperability

The companion standard IEC 60870-5-102 defines parameters and alternatives are those from which subset have to be selected to implement particular systems for transmission of integrated totals. Certain parameter values, such as the number of octets in the COMMON ADDRESS OF ASDUs represent mutually exclusive alternatives. This means that only one value of the defined parameters is admitted per system. Other parameters, such as the listed set of different information in control and in monitor direction allow the specification of the complete set or subsets, as appropriate for given applications. This clause summarizes the parameters of the previous clauses to facilitate a suitable selection for a specific application. If a system is composed of equipment stemming from different manufacturers, it is necessary that all partners agree on the selected parameters.

### Note:

In addition, the full specification of a system may require individual selection of certain parameters for certain parts of the system, such as the individual selection of scaling factors for individually addressable measured values.

The selected parameters should be marked in the white boxes as follows:

## 2.1. Network configuration (network-specific parameter)

- |                                     |                         |                                     |                      |
|-------------------------------------|-------------------------|-------------------------------------|----------------------|
| <input checked="" type="checkbox"/> | Point-to-point          | <input checked="" type="checkbox"/> | Multipoint-partyline |
| <input checked="" type="checkbox"/> | Multiple point-to-point | <input checked="" type="checkbox"/> | Multipoint-star      |
| <input type="checkbox"/>            | Dialled point-to-point  |                                     |                      |

## 2.2. Physical layer (network-specific parameter)

### Transmission speed (control direction)

Unbalanced interchange  
circuit V.24/V.28 -  
Standard

- 100 bit/s
- 200 bit/s
- 300 bit/s
- 600 bit/s
- 1200 bit/s

Unbalanced interchange  
circuit V.24/V.28 -  
Recommended  
if > 1200 bit/s

- 2400 bit/s
- 4800 bit/s
- 9600 bit/s

Balanced interchange  
circuit X.24/X.27

- 2400 bit/s
- 4800 bit/s
- 9600 bit/s
- 19200 bit/s
- 38400 bit/s

- 56000 bit/s
- 64000 bit/s

### Transmission speed (monitor direction)

Unbalanced interchange  
circuit V.24/V.28 -  
Standard

- 100 bit/s
- 200 bit/s
- 300 bit/s
- 600 bit/s
- 1200 bit/s

Unbalanced interchange  
circuit V.24/V.28 -  
Recommended  
if > 1200 bit/s

- 2400 bit/s
- 4800 bit/s
- 9600 bit/s

Balanced interchange  
circuit X.24/X.27

- 2400 bit/s
- 4800 bit/s
- 9600 bit/s
- 19200 bit/s
- 38400 bit/s

- 56000 bit/s
- 64000 bit/s

## 2.3. Link Layer (network-specific parameter)

Frame format FT 1.2, single character 1 and the fixed time out interval are used exclusively in this standard.

### Address field of the link

- |                                     |             |                                     |              |
|-------------------------------------|-------------|-------------------------------------|--------------|
| <input type="checkbox"/>            | Not present | <input type="checkbox"/>            | Structured   |
| <input checked="" type="checkbox"/> | 1 Octet     | <input checked="" type="checkbox"/> | Unstructured |
| <input checked="" type="checkbox"/> | 2 Octets    |                                     |              |

### Frame length

- |                                  |                                     |
|----------------------------------|-------------------------------------|
| <input type="text" value="256"/> | Maximum length L (number of octets) |
|----------------------------------|-------------------------------------|

### Link service functions

- |                          |                                   |
|--------------------------|-----------------------------------|
| <input type="checkbox"/> | Reset of user process not present |
|--------------------------|-----------------------------------|

## 2.4. Application layer

### Transmission mode for application data

Mode 1 (least significant octet first), as defined in 4.10 of IEC 870-5-4, is used exclusively in this companion standard.

### Manufacturer code (manufacturer-specific parameter)

System specific codes for different manufacturers

Number	Manufacturer
1	_____
2	_____
.....	
255	_____

### Address of integrated total DTE (system-specific parameter)

1 Octet                       2 Octets

### Signature (system-specific parameter)

Signature                       No signature

**Record address  
(system-specific parameter)**

<input checked="" type="checkbox"/>	Basic values				
<input checked="" type="checkbox"/>	Period 1	Period time:	<input type="text"/>		
<input checked="" type="checkbox"/>	Period 2	Period time:	<input type="text"/>		
<input checked="" type="checkbox"/>	Period 3	Period time:	<input type="text"/>		
<input checked="" type="checkbox"/>	Daily values	<input checked="" type="checkbox"/>	Monthly values	<input checked="" type="checkbox"/>	Annual values
<input checked="" type="checkbox"/>	Period 1	<input checked="" type="checkbox"/>	Period 1	<input checked="" type="checkbox"/>	Period 1
<input checked="" type="checkbox"/>	Period 2	<input checked="" type="checkbox"/>	Period 2	<input checked="" type="checkbox"/>	Period 2
<input checked="" type="checkbox"/>	Period 3	<input checked="" type="checkbox"/>	Period 3	<input checked="" type="checkbox"/>	Period 3
<input checked="" type="checkbox"/>	Integrated totals from the start of the accounting period				
<input type="checkbox"/>	Monthly accounting period	<input type="checkbox"/>	Quarterly (every 3 months) accounting period		
<input type="checkbox"/>	Annual accounting period				
<input checked="" type="checkbox"/>	Oldest single-point information				
<input checked="" type="checkbox"/>	Complete record of single-point information				
<input checked="" type="checkbox"/>	Record section 1 of single-point information				
<input checked="" type="checkbox"/>	Record section 2 of single-point information				
<input checked="" type="checkbox"/>	Record section 3 of single-point information				
<input checked="" type="checkbox"/>	Record section 4 of single-point information				

**Tariff information  
(system-specific parameter)**

<input type="checkbox"/>	Tariff information	<input checked="" type="checkbox"/>	No tariff information
--------------------------	--------------------	-------------------------------------	-----------------------

### Selection of standard ASDUs (station-specific parameter)

#### Process information in monitor direction

<input checked="" type="checkbox"/>	<1> : = Single-point information with time tag	M_SP_TA_2
<input checked="" type="checkbox"/>	<2> : = Accounting integrated totals, 4 octets each	M_IT_TA_2
<input checked="" type="checkbox"/>	<3> : = Accounting integrated totals, 3 octets each	M_IT_TB_2
<input checked="" type="checkbox"/>	<4> : = Accounting integrated totals, 2 octets each	M_IT_TC_2
<input checked="" type="checkbox"/>	<5> : = Periodically reset accounting integrated totals, 4 octets each	M_IT_TD_2
<input checked="" type="checkbox"/>	<6> : = Periodically reset accounting integrated totals, 3 octets each	M_IT_TE_2
<input checked="" type="checkbox"/>	<7> : = Periodically reset accounting integrated totals, 2 octets each	M_IT_TF_2
<input checked="" type="checkbox"/>	<8> : = Operational integrated totals, 4 octets each	M_IT_TG_2
<input checked="" type="checkbox"/>	<9> : = Operational integrated totals, 3 octets each	M_IT_TH_2
<input checked="" type="checkbox"/>	<10> : = Operational integrated totals, 2 octets each	M_IT_TI_2
<input checked="" type="checkbox"/>	<11> : = Periodically reset operational integrated totals, 4 octets each	M_IT_TK_2
<input checked="" type="checkbox"/>	<12> : = Periodically reset operational integrated totals, 3 octets each	M_IT_TL_2
<input checked="" type="checkbox"/>	<13> : = Periodically reset operational integrated totals, 2 octets each	M_IT_TM_2

#### Process information in monitor direction (private range)

<input checked="" type="checkbox"/>	<201> : = Reply for general interrogation command IEC 102 protocol (SAE specific)	
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#### System information in monitor direction

<input checked="" type="checkbox"/>	<70> : = End of initialization	M_EI_NA_2
<input checked="" type="checkbox"/>	<71> : = Manufacturer and product specification of integrated total DTE	P_MP_NA_2
<input type="checkbox"/>	<72> : = Current system time of integrated total DTE	M_TI_TA_2



### System information in control direction

<input checked="" type="checkbox"/>	<100> : = Read manufacturer and product specification	C_RD_NA_2
<input checked="" type="checkbox"/>	<101> : = Read record of single-point information with time tag	C_SP_NA_2
<input type="checkbox"/>	<102> : = Read record of single-point information with time tag of a selected time range	C_SP_NB_2
<input type="checkbox"/>	<103> : = Read current system time of integrated total DTE	C_TI_NA_2
<input checked="" type="checkbox"/>	<104> : = Read accounting integrated totals of the oldest integration period	C_CI_NA_2
<input checked="" type="checkbox"/>	<105> : = Read accounting integrated totals of the oldest integration period and of a selected range of addresses	C_CI_NB_2
<input type="checkbox"/>	<106> : = Read accounting integrated totals of a specific past integration period	C_CI_NC_2
<input type="checkbox"/>	<107> : = Read accounting integrated totals of a specific past integration period and of a selected range of addresses	C_CI_ND_2
<input checked="" type="checkbox"/>	<108> : = Read periodically reset accounting integrated totals of the oldest integration period	C_CI_NE_2
<input checked="" type="checkbox"/>	<109> : = Read periodically reset accounting integrated totals of the oldest integration period and of a selected range of addresses	C_CI_NF_2
<input type="checkbox"/>	<110> : = Read periodically reset accounting integrated totals of a specific past integration period	C_CI_NG_2
<input type="checkbox"/>	<111> : = Read periodically reset accounting integrated totals of a specific past integration period and of a selected range of addresses	C_CI_NH_2
<input checked="" type="checkbox"/>	<112> : = Read operational integrated totals of the oldest integration period	C_CI_NJ_2
<input checked="" type="checkbox"/>	<113> : = Read operational integrated totals of the oldest integration period and of a selected range of addresses	C_CI_NK_2
<input type="checkbox"/>	<114> : = Read operational integrated totals of a specific past integration period	C_CI_NL_2
<input type="checkbox"/>	<115> : = Read operational integrated totals of a specific past integration period and of a selected range of addresses	C_CI_NM_2
<input checked="" type="checkbox"/>	<116> : = Read periodically reset operational integrated totals of the oldest integration period	C_CI_NN_2
<input checked="" type="checkbox"/>	<117> : = Read periodically reset operational integrated totals of the oldest integration period and of a selected range of addresses	C_CI_NO_2
<input type="checkbox"/>	<118> : = Read periodically reset operational integrated totals of a specific past integration period	C_CI_NP_2
<input type="checkbox"/>	<119> : = Read periodically reset operational integrated totals of a specific past integration period and of a selected range of addresses	C_CI_NQ_2
<input type="checkbox"/>	<120> : = Read accounting integrated totals of a selected time range and of a selected range of addresses	C_CI_NR_2
<input type="checkbox"/>	<121> : = Read periodically reset accounting integrated totals of a selected time range and of a selected range of addresses	C_CI_NS_2
<input type="checkbox"/>	<122> : = Read operational integrated totals of a selected time range and of a selected range of addresses	C_CI_NT_2
<input type="checkbox"/>	<123> : = Read periodically reset operational integrated totals of a selected time range and of a selected range of addresses	C_CI_NU_2

### System information in control direction (private range)

<input checked="" type="checkbox"/>	<200> : = General interrogation command in IEC 102 protocol (SAE specific)
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## 2.5. Basic application functions

### Transmission of integrated totals (station-specific parameter)

Number of accounting integrated totals	_____
Number of periodically reset accounting integrated totals	_____
Number of operational integrated totals	_____
Number of periodically reset operational integrated totals	max. 2000 for all stations and types

Integrated totals are transmitted by read functions only (including latest period)

### Read records (station-specific parameter)

		Size of record:	
Complete record	<input checked="" type="checkbox"/>	Number of single-point information:	_____
Record section 1	<input checked="" type="checkbox"/>	Number of single-point information:	_____
Record section 2	<input checked="" type="checkbox"/>	Number of single-point information:	_____
Record section 3	<input checked="" type="checkbox"/>	Number of single-point information:	_____
Record section 4	<input checked="" type="checkbox"/>	Number of single-point information:	max. 1000 for all stations and types

No record, single-point information is transmitted spontaneously

### Transmission of single-point information (station-specific parameter)

- Transmission of local acknowledged single-point information
- No transmission of local acknowledged single-point information

### **3. Interoperability of SICAM 1703 according IEC 60870-5-102 using 102SA9 (Slave)**

#### **Contents**

3.1.	Network configuration (network-specific parameter).....	21
3.2.	Physical layer (network-specific parameter) .....	22
3.3.	Link Layer (network-specific parameter) .....	23
3.4.	Application layer .....	24
3.5.	Basic application functions .....	28

## Interoperability

The companion standard IEC 60870-5-102 defines parameters and alternatives are those from which subset have to be selected to implement particular systems for transmission of integrated totals. Certain parameter values, such as the number of octets in the COMMON ADDRESS OF ASDUs represent mutually exclusive alternatives. This means that only one value of the defined parameters is admitted per system. Other parameters, such as the listed set of different information in control and in monitor direction allow the specification of the complete set or subsets, as appropriate for given applications. This clause summarizes the parameters of the previous clauses to facilitate a suitable selection for a specific application. If a system is composed of equipment stemming from different manufacturers, it is necessary that all partners agree on the selected parameters.

### Note:

In addition, the full specification of a system may require individual selection of certain parameters for certain parts of the system, such as the individual selection of scaling factors for individually addressable measured values.

The selected parameters should be marked in the white boxes as follows:

### 3.1. Network configuration (network-specific parameter)

- Point-to-point
- Multiple point-to-point
- Dialled point-to-point

- Multipoint-partyline
- Multipoint-star

### 3.2. Physical layer (network-specific parameter)

#### Transmission speed (control direction)

Unbalanced interchange  
circuit V.24/V.28 -  
Standard

- 100 bit/s
- 200 bit/s
- 300 bit/s
- 600 bit/s
- 1200 bit/s

Unbalanced interchange  
circuit V.24/V.28 -  
Recommended  
if > 1200 bit/s

- 2400 bit/s
- 4800 bit/s
- 9600 bit/s

Balanced interchange  
circuit X.24/X.27

- 2400 bit/s
- 4800 bit/s
- 9600 bit/s
- 19200 bit/s
- 38400 bit/s

- 56000 bit/s
- 64000 bit/s

#### Transmission speed (monitor direction)

Unbalanced interchange  
circuit V.24/V.28 -  
Standard

- 100 bit/s
- 200 bit/s
- 300 bit/s
- 600 bit/s
- 1200 bit/s

Unbalanced interchange  
circuit V.24/V.28 -  
Recommended  
if > 1200 bit/s

- 2400 bit/s
- 4800 bit/s
- 9600 bit/s

Balanced interchange  
circuit X.24/X.27

- 2400 bit/s
- 4800 bit/s
- 9600 bit/s
- 19200 bit/s
- 38400 bit/s

- 56000 bit/s
- 64000 bit/s

### 3.3. Link Layer (network-specific parameter)

Frame format FT 1.2, single character 1 and the fixed time out interval are used exclusively in this standard.

#### Address field of the link

- Not present
- 1 Octet
- 2 Octets

- Structured
- Unstructured

#### Frame length

- Maximum length L (number of octets)

#### Link service functions

- Reset of user process not present

### 3.4. Application layer

#### Transmission mode for application data

Mode 1 (least significant octet first), as defined in 4.10 of IEC 870-5-4, is used exclusively in this companion standard.

#### Manufacturer code (manufacturer-specific parameter)

System specific codes for different manufacturers

Number	Manufacturer
1	_____
2	_____
.....	
255	_____

#### Address of integrated total DTE (system-specific parameter)

1 Octet                       2 Octets

#### Signature (system-specific parameter)

Signature                       No signature



**Record address  
(system-specific parameter)**

<input checked="" type="checkbox"/> Basic values		
<input checked="" type="checkbox"/> Period 1	Period time:	<input type="text"/>
<input checked="" type="checkbox"/> Period 2	Period time:	<input type="text"/>
<input checked="" type="checkbox"/> Period 3	Period time:	<input type="text"/>
<input checked="" type="checkbox"/> Daily values	<input checked="" type="checkbox"/> Monthly values	<input checked="" type="checkbox"/> Annual values
<input checked="" type="checkbox"/> Period 1	<input checked="" type="checkbox"/> Period 1	<input checked="" type="checkbox"/> Period 1
<input checked="" type="checkbox"/> Period 2	<input checked="" type="checkbox"/> Period 2	<input checked="" type="checkbox"/> Period 2
<input checked="" type="checkbox"/> Period 3	<input checked="" type="checkbox"/> Period 3	<input checked="" type="checkbox"/> Period 3
<input checked="" type="checkbox"/> Integrated totals from the start of the accounting period		
<input type="checkbox"/> Monthly accounting period	<input type="checkbox"/> Quarterly (every 3 months) accounting period	
<input type="checkbox"/> Annual accounting period		
<input type="checkbox"/> Oldest single-point information		
<input type="checkbox"/> Complete record of single-point information		
<input type="checkbox"/> Record section 1 of single-point information		
<input type="checkbox"/> Record section 2 of single-point information		
<input type="checkbox"/> Record section 3 of single-point information		
<input type="checkbox"/> Record section 4 of single-point information		

**Tariff information  
(system-specific parameter)**

<input type="checkbox"/> Tariff information	<input checked="" type="checkbox"/> No tariff information
---	---

### Selection of standard ASDUs (station-specific parameter)

#### Process information in monitor direction

<input type="checkbox"/>	<1> : = Single-point information with time tag	M_SP_TA_2
<input checked="" type="checkbox"/>	<2> : = Accounting integrated totals, 4 octets each	M_IT_TA_2
<input type="checkbox"/>	<3> : = Accounting integrated totals, 3 octets each	M_IT_TB_2
<input type="checkbox"/>	<4> : = Accounting integrated totals, 2 octets each	M_IT_TC_2
<input type="checkbox"/>	<5> : = Periodically reset accounting integrated totals, 4 octets each	M_IT_TD_2
<input type="checkbox"/>	<6> : = Periodically reset accounting integrated totals, 3 octets each	M_IT_TE_2
<input type="checkbox"/>	<7> : = Periodically reset accounting integrated totals, 2 octets each	M_IT_TF_2
<input type="checkbox"/>	<8> : = Operational integrated totals, 4 octets each	M_IT_TG_2
<input type="checkbox"/>	<9> : = Operational integrated totals, 3 octets each	M_IT_TH_2
<input type="checkbox"/>	<10> : = Operational integrated totals, 2 octets each	M_IT_TI_2
<input type="checkbox"/>	<11> : = Periodically reset operational integrated totals, 4 octets each	M_IT_TK_2
<input type="checkbox"/>	<12> : = Periodically reset operational integrated totals, 3 octets each	M_IT_TL_2
<input type="checkbox"/>	<13> : = Periodically reset operational integrated totals, 2 octets each	M_IT_TM_2

#### Process information in monitor direction (private range)

<input type="checkbox"/>	<201> : = Reply for general interrogation command IEC 102 protocol (SAE specific)	
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#### System information in monitor direction

<input checked="" type="checkbox"/>	<70> : = End of initialization	M_EI_NA_2
<input checked="" type="checkbox"/>	<71> : = Manufacturer and product specification of integrated total DTE	P_MP_NA_2
<input type="checkbox"/>	<72> : = Current system time of integrated total DTE	M_TI_TA_2

**System information in control direction**

<input checked="" type="checkbox"/>	<100> : = Read manufacturer and product specification	C_RD_NA_2
<input type="checkbox"/>	<101> : = Read record of single-point information with time tag	C_SP_NA_2
<input type="checkbox"/>	<102> : = Read record of single-point information with time tag of a selected time range	C_SP_NB_2
<input type="checkbox"/>	<103> : = Read current system time of integrated total DTE	C_TI_NA_2
<input type="checkbox"/>	<104> : = Read accounting integrated totals of the oldest integration period	C_CI_NA_2
<input type="checkbox"/>	<105> : = Read accounting integrated totals of the oldest integration period and of a selected range of addresses	C_CI_NB_2
<input type="checkbox"/>	<106> : = Read accounting integrated totals of a specific past integration period	C_CI_NC_2
<input type="checkbox"/>	<107> : = Read accounting integrated totals of a specific past integration period and of a selected range of addresses	C_CI_ND_2
<input type="checkbox"/>	<108> : = Read periodically reset accounting integrated totals of the oldest integration period	C_CI_NE_2
<input type="checkbox"/>	<109> : = Read periodically reset accounting integrated totals of the oldest integration period and of a selected range of addresses	C_CI_NF_2
<input type="checkbox"/>	<110> : = Read periodically reset accounting integrated totals of a specific past integration period	C_CI_NG_2
<input type="checkbox"/>	<111> : = Read periodically reset accounting integrated totals of a specific past integration period and of a selected range of addresses	C_CI_NH_2
<input type="checkbox"/>	<112> : = Read operational integrated totals of the oldest integration period	C_CI_NJ_2
<input type="checkbox"/>	<113> : = Read operational integrated totals of the oldest integration period and of a selected range of addresses	C_CI_NK_2
<input type="checkbox"/>	<114> : = Read operational integrated totals of a specific past integration period	C_CI_NL_2
<input type="checkbox"/>	<115> : = Read operational integrated totals of a specific past integration period and of a selected range of addresses	C_CI_NM_2
<input type="checkbox"/>	<116> : = Read periodically reset operational integrated totals of the oldest integration period	C_CI_NN_2
<input type="checkbox"/>	<117> : = Read periodically reset operational integrated totals of the oldest integration period and of a selected range of addresses	C_CI_NO_2
<input type="checkbox"/>	<118> : = Read periodically reset operational integrated totals of a specific past integration period	C_CI_NP_2
<input type="checkbox"/>	<119> : = Read periodically reset operational integrated totals of a specific past integration period and of a selected range of addresses	C_CI_NQ_2
<input type="checkbox"/>	<120> : = Read accounting integrated totals of a selected time range and of a selected range of addresses	C_CI_NR_2
<input type="checkbox"/>	<121> : = Read periodically reset accounting integrated totals of a selected time range and of a selected range of addresses	C_CI_NS_2
<input type="checkbox"/>	<122> : = Read operational integrated totals of a selected time range and of a selected range of addresses	C_CI_NT_2
<input type="checkbox"/>	<123> : = Read periodically reset operational integrated totals of a selected time range and of a selected range of addresses	C_CI_NU_2

**System information in control direction (private range)**

<input type="checkbox"/>	<200> : = General interrogation command in IEC 102 protocol (SAE specific)
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### 3.5. Basic application functions

#### Transmission of integrated totals (station-specific parameter)

Number of accounting integrated totals	_____
Number of periodically reset accounting integrated totals	_____
Number of operational integrated totals	_____
Number of periodically reset operational integrated totals	max. 100 for all types

Integrated totals are transmitted by read functions only (including latest period)

#### Read records (station-specific parameter)

		Size of record:	
Complete record	<input type="checkbox"/>	Number of single-point information:	_____
Record section 1	<input type="checkbox"/>	Number of single-point information:	_____
Record section 2	<input type="checkbox"/>	Number of single-point information:	_____
Record section 3	<input type="checkbox"/>	Number of single-point information:	_____
Record section 4	<input type="checkbox"/>	Number of single-point information:	_____

No record, single-point information is transmitted spontaneously

#### Transmission of single-point information (station-specific parameter)

Transmission of local acknowledged single-point information

No transmission of local acknowledged single-point information

# Literature

ACP 1703 Common Functions System and Basic System Elements	DC0-015-2
ACP 1703 Platforms Configuration Automation Units and Automation Networks	DC0-021-2
IEC 60870-5-102 Fernwirkrichtungen und -systeme Teil 5: Übertragungsprotokolle Hauptabschnitt 102: Anwendungsbezogene Norm für die Zählerstandsübertragung in der Elektrizitätsversorgung (IEC 60870-5-102: 1996)	
IEC 60870-5-102 {Ed.1.0} Telecontrol equipment and systems Part 5: Transmission protocols Section 102: Companion standard for the transmission of integrated totals in electric power systems (1996-06)	
Beschreibung der Firmware 102MA0 IEC60870-5-102 Zentralenfunktion (Unbalanced Multipoint Master) zur Ankopplung von elektronischen Zählgeräten	DC0-045-2.03

