

## **Cerberus® MF7000 Digital PLC-Unit**

### **Equipment Application Project Sheets**



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# 1. MUX/DMX System in DMS7000

## 1.1. Digital PLC Unit MF7033

### Terminology

MF7000 comprises a range of 3 equipment sizes.

- MF7013 is the smallest and is integrated into the MC7000.
- MF7023 is the intermediate size and can only be integrated into the MC7033.
- MF7033 is the largest of the MF7000 family and is an autonomous piece of equipment.

### Applications

Situated in the evaluation level a digital PLC-Unit **MF7000** fulfills the following tasks:

- displays selected information from the satellite control units on a MIMIC tableau
- controls selected functions in the satellite control units eg. fire control, via push-buttons in a separate dedicated console
- interface to other building systems via electrically isolated inputs and outputs .

### Functions

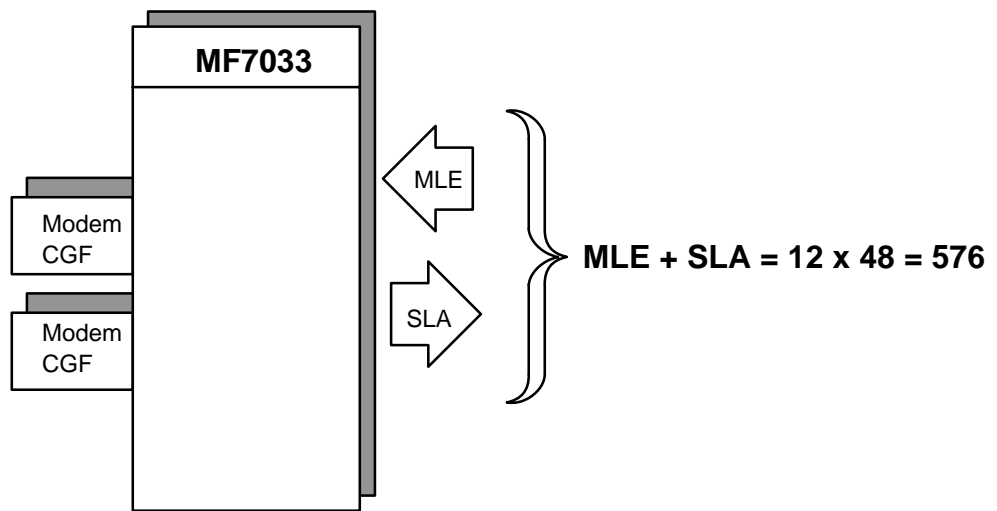
- controls and monitors the connected control units
- signals to be monitored by the MF7000 are connected via digital inputs (relay/switch contacts etc.) and control signals are connected to digital outputs (relay/LED-drivers).
- transmits and receives information via DMS7000 Network CERBAN or CERLOOP.
- stores process image and system data
- monitors all interfaces and functions
- micro-processor controlled with its own monitored power supply
- in addition to logic/time elements a number of other security specific PLC-functions are available

### Basic design

The digital PLC-Unit comprises various modules in single and double Europa card format which are assembled into pre-wired 19"-Racks

- expansion may be achieved in steps of 48 inputs (or outputs) and is limited to a total of 12 modules.
- inputs and outputs are electrically isolated via opto-isolators
- options include a relay adapter (with 48 relays) and an LED test field
- rack, power supply and all external connections can be built into a 19"- cabinet
- connection to external installations is made via terminal strips or via pre-fabricated cable connectors.

### 1.1.1. Symbolic Representation in Site Configuration



- MLE = digital multiplexer input (Melde-Linie Eingang)
- SLA = digital demultiplexer output (Steuer-Linie Ausgang)
- input/output electrically isolated via opto-isolators

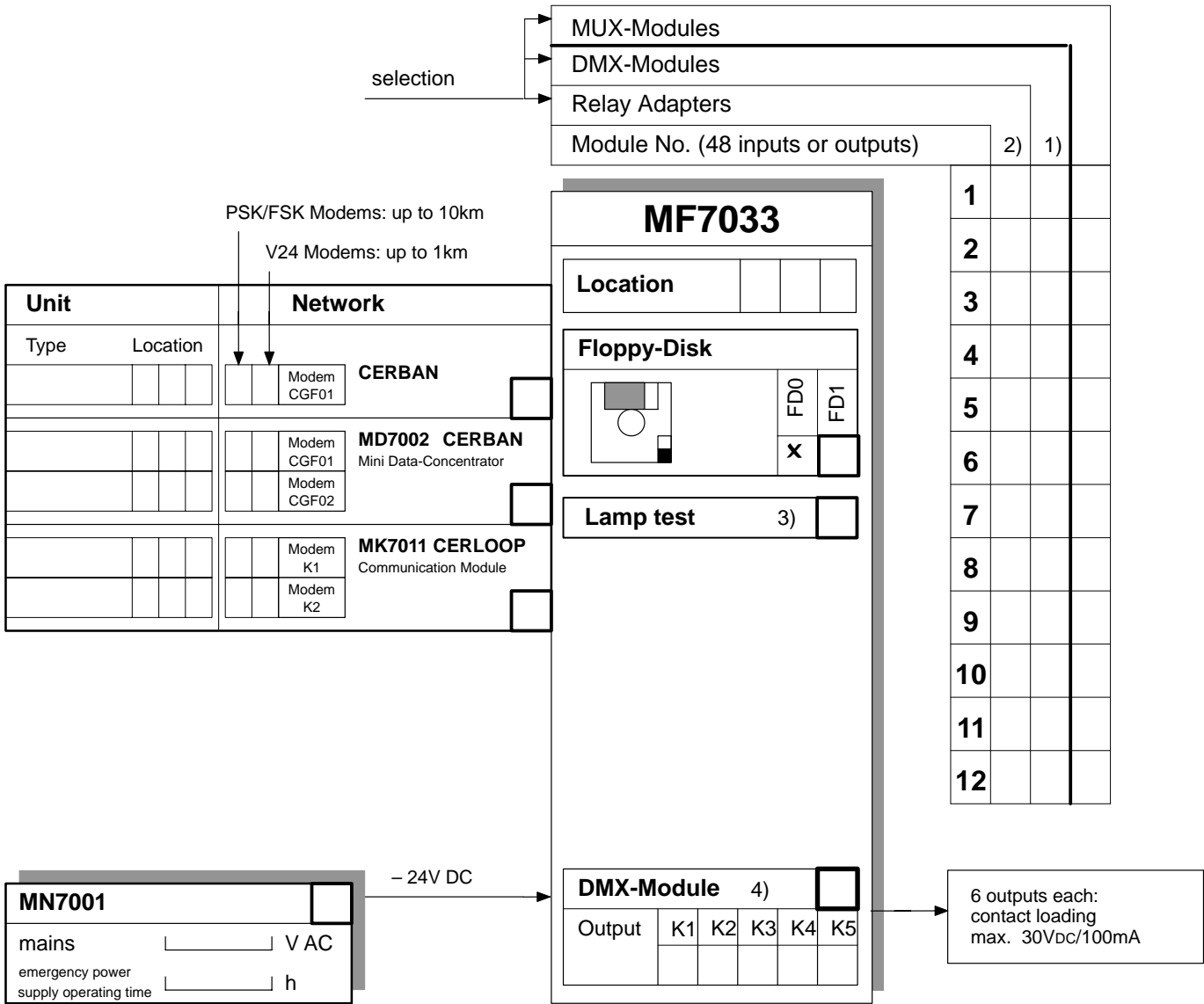
## 2. Project Documentation of HW-Configuration

### 2.1. Equipment Configuration

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	<b><i>the following data is required for project engineering</i></b>
<b>Network</b>	CERLOOP or CERBAN max. distance between modems
<b>Location</b>	equipment address
<b>Floppy Disk</b>	quantity dependent on number of input elements, output elements and logic elements 720kB: FD0 ca. 3000 elements FD1 ca. 7500 elements 1,44MB: FD0 ca. 7500 elements FD1 ca. 15000 elements
	<b><i>note load factors, see Doc. e999 PLC-Functions!</i></b>
	wiring may be considerably simplified by grouping together DMX outputs with LED's (eg. DMX-Adr1 SLA 01 ... 30 etc.)
<b>Power supply</b>	with or without emergency power supply mains voltage min. emergency power time
<b>MUX/DMX I/O's</b>	number of MUX / DMX-Modules (48 outputs or 48 inputs per module) number of monitored lines number of outputs with relay adapter
<b>LED-test</b>	available for MF7033 only
<b>DMX-Module</b>	number of modules (max. 6 outputs per board)

## 2.2. Digital PLC-Unit MF7033

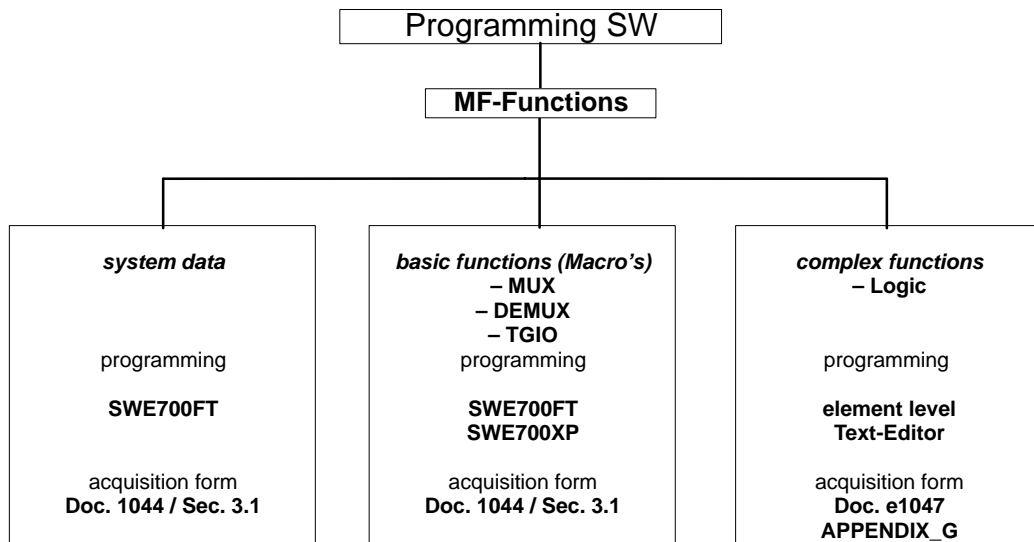


- 1) Operating principle used in output circuits is described in Section 2 "Power Supply/Control Principle".
- 2) Relay-Adapter control voltage = -24VDC; max. contact loading = 24VDC/100mA (ohmic load).
- 3) Lamp Test only available if all outputs of a DMX-module drive LED's.
- 4) K5 only possible if Lamp Test is **not** installed.

4	System	Drawn	
	Location	Appr.	
	Series    Index    Sheet		



### 3. Programming PLC Functions



### 3.1. System Data for Digital PLC-Unit MF7033

<b>project</b> (max. 8 characters)	
<b>title</b> (max. 35 characters)	

	default	entry	valid entries
<b>location address</b>	801		800 ... 863
<b>protocol</b>	CERLOOP	CERLOOP CERBAN	CERBAN / CERLOOP
<b>transmit presence telegrams</b>	yes	yes no	yes / no
<b>presence monitoring interval</b>	50		50 ... 99s
<b>time synchronisation</b>	via time tg.	via time tg. via int. clock	via time tg. / via int. clock
<b>power supply monitoring</b>	batteries	with batt. without batt. no monitoring	with batteries without batteries no monitoring
<b>MPU hardware</b> E2H 080 should not be used in new installations	E2H 081	E2H 080 E2H 081	E2H 080 / E2H 081

#### 3.1.1. Hardware Configuration

MPU E2H 081	default	entry	MPU E2H 080	default	entry	valid entries
<b>PIA E2H 081</b>	Port 1	S(N) 1)	no PIA's present			S = PS monitoring L = LEDtest I = Input O = Output N = not used  Note: L = LEDtest via Port 4 of E1H 040 only!
	Port 2	N				
<b>PIA E1H 040</b>	Port 1	N	<b>PIA E1H 040</b>	Port 1	S(N) 1)	
	Port 2	N		Port 2	N	
	Port 3	N		Port 3	N	
	Port 4	N		Port 4	N	

1) according to power supply monitoring: S = with/without batteries; N = no power supply monitoring

disks	default	entry	valid entries
1 floppy disk 1,4 MB	X		X indicates relevant configuration  only ONE entry possible!
2 floppy disks 1,4 MB			
1 floppy disk 720KB			
2 floppy disks 720KB			
Hard disk	-	-	not foreseen

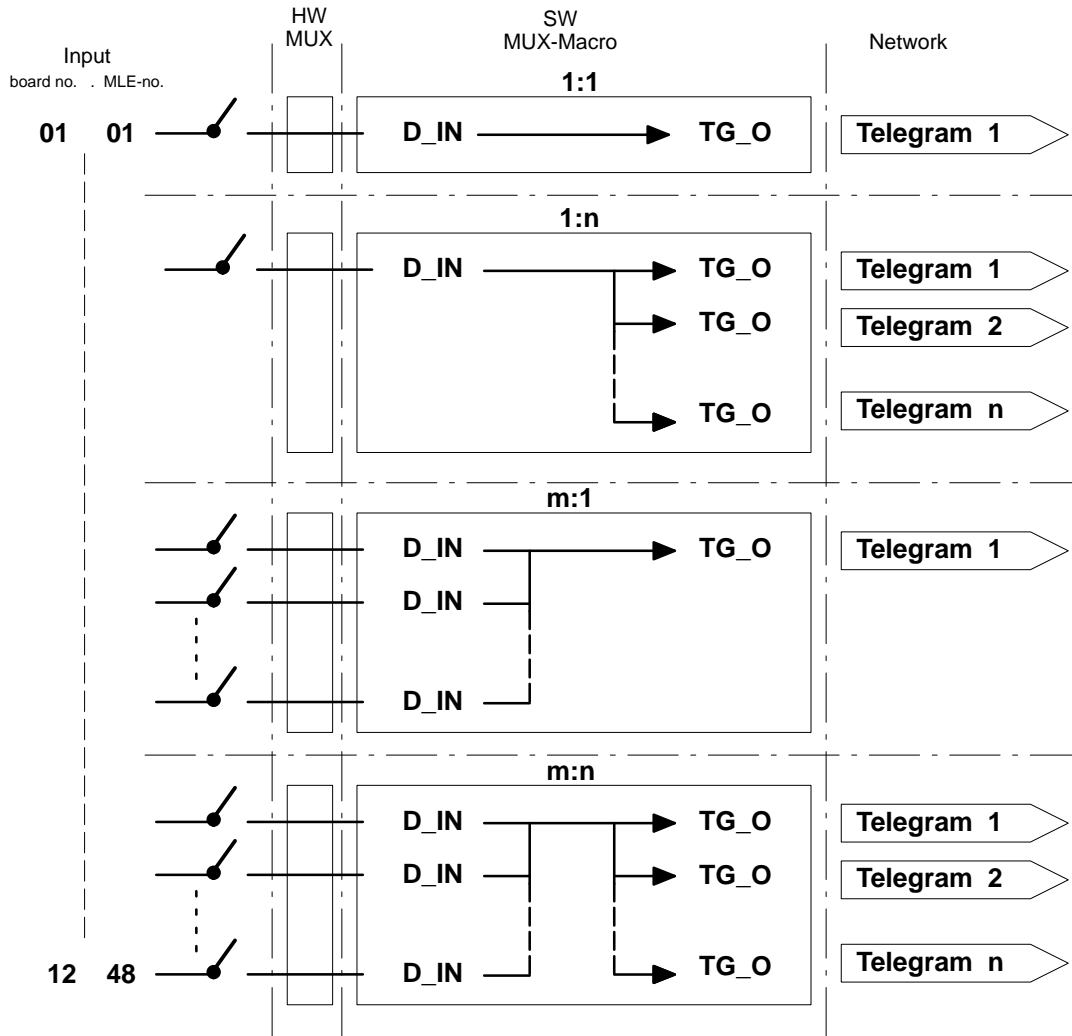
digital I/O modules	default	entry	valid entries 2)
MUX	0		1 ... 16
DMX	0		1 ... 16

2) sum of MUX/DMX-modules ≤ 12

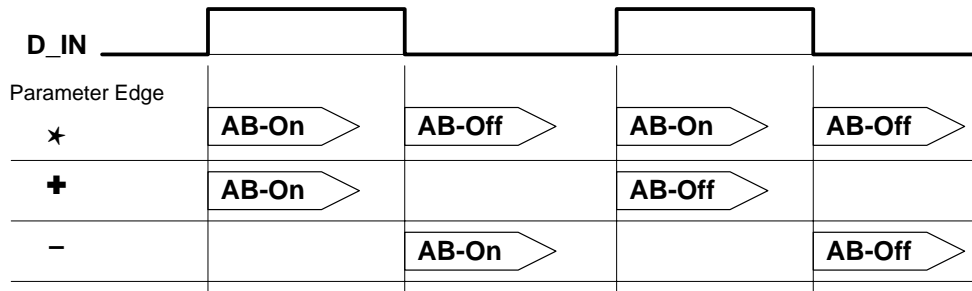
<b>Fire protection and security systems</b>	System	Drawn	
	Location	Appr.	
		Series	Index
			Sheet

## 3.2. Configuration using List Editor SWE700FT

### 3.2.1. MUX-Macro: Digital Input – Telegram Output



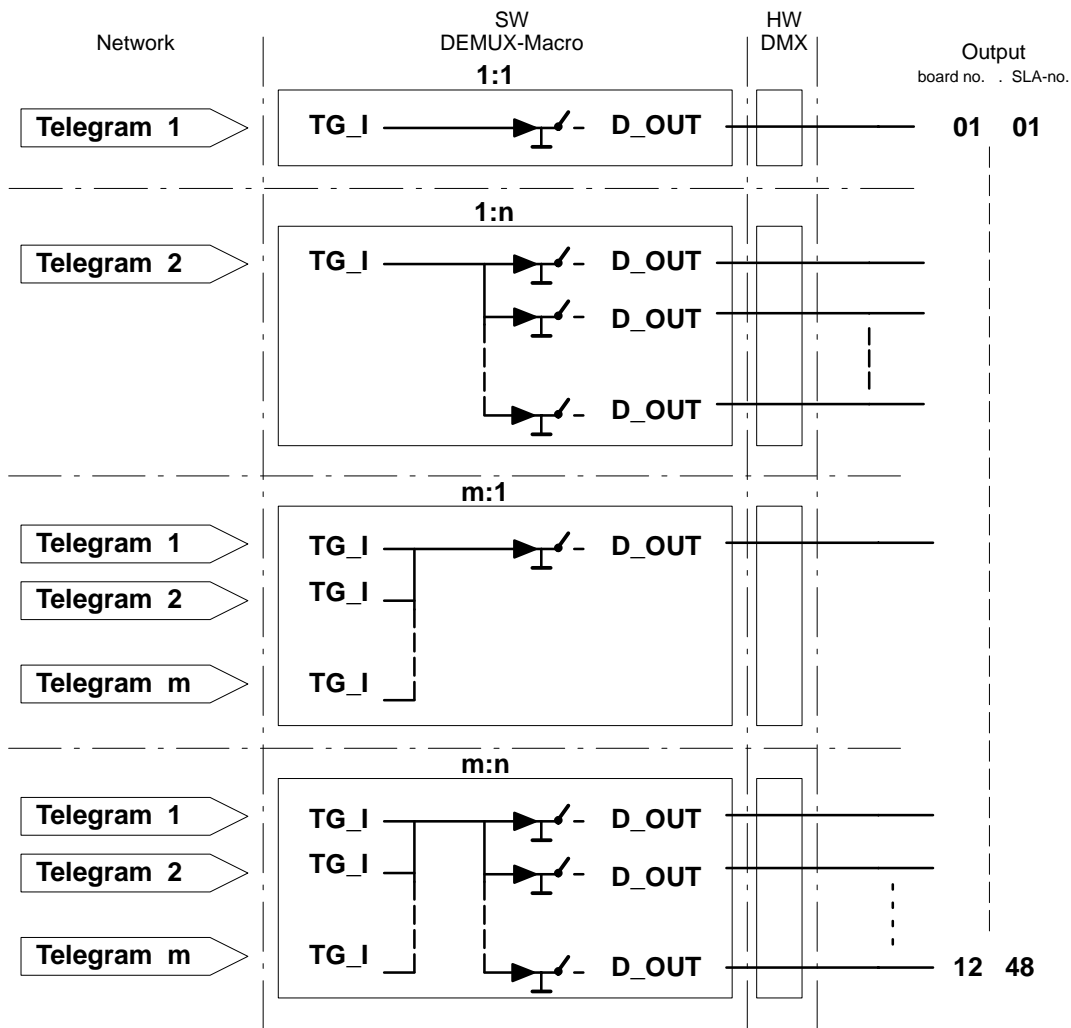
Reaction is dependent on the rising and falling edge of parameters.



example: AB-ON = 41 4F : telegram "detection element active"  
 AB-OFF = 41 3C : telegram "detection element normal operation"

**Note:** if AB-OFF is programmed as 00 00 then only the AB-ON telegram will be transmitted.

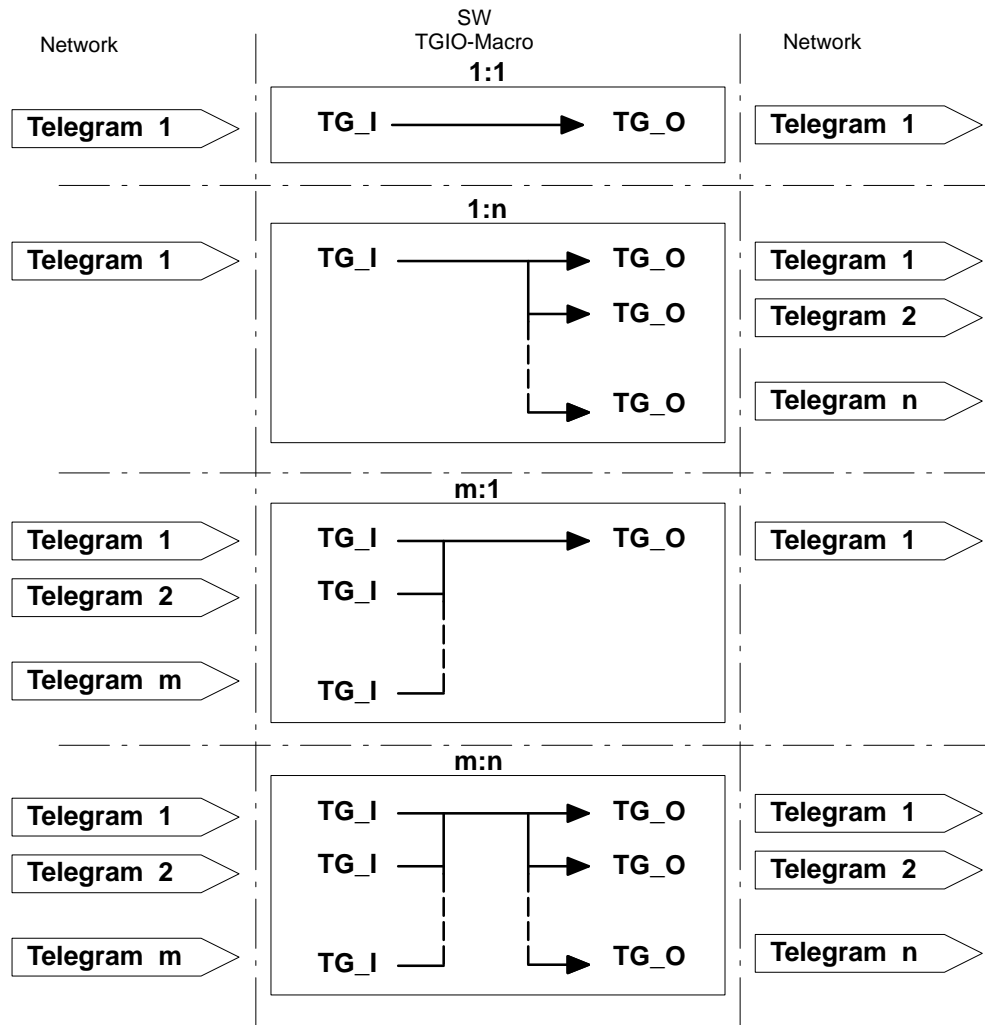
### 3.2.2. DEMUX-Macro: Telegram Input – Digital Output



DEMUX-Macro's can be used to control one or more digital outputs on the occurrence of one (or more) events (telegram inputs): unacknowledged (U) and acknowledged (Q) events are treated separately. The output signal can be programmed for every event state. (I=inactive, B=flashing, A=active). In addition the parameter "Log" can be used to specify the quiescent state of the output signal.  
 Output normally inactive = pos. logic = P  
 Output normally active = neg. logic = N

**Note:** The SW does not distinguish between first alarms and subsequent alarms.

### 3.2.3. TGIO-Macro: Telegram Input – Telegram Output



TGIO-Macro's can be used to generate one or more telegrams with data-block AB-ON on the occurrence of one (or more) specified events (telegram input). When all events return to normal operation (reset, trouble end etc.), one or more telegrams with data-block AB-OFF will be transmitted.

### 3.3. Key to Acquisition Forms MF7033/SWE700FT

Field	Purpose	Valid Entries	Digital		Telegram	
			In	Out	In	Out
<b>McNr</b>	Macro-No.: internal reference between: - TG-Input and Digital-Output /TG-Output - Digital-Input and TG-Output	0001 ... 9999 0000 = no connection	*	*	*	*
<b>Input</b>	MUX board number and input number	01 ... 12            01 ... 48	*			
<b>Edge</b>	Signal edge specifies which edge of input signal is evaluated	* = pos. and neg. edge + = pos. edge - = neg. edge	*			
<b>Output</b>	DMUX board number and output number	01 ... 12            01 ... 48		*		
<b>LED</b>	LEDtest specifies if LED connected to corresponding output can be tested via LEDtest	Y = output with LED N = no LED		*		
<b>Log</b>	Logic specifies if corresponding output is normally active (pos. logic) or inactive (neg. logic)	P = positive logic (LEDtest) N = negative logic (noLEDtest)		*		
<b>U</b>	output state BEFORE message is acknowledged	I = inactive B = flashing A = active		*		
<b>Q</b>	output state AFTER message is acknowledged	I = inactive B = flashing A = active		*		
<b>S</b>	sector	0 = BASIC Sector A = FIRE B = EXTINGUISHING C = INTRUSION D = GAS E = BUILDING SERVICES F = DATA CONCENTRATOR			*	*
<b>Loc</b>	location address	100, 110 ... 148 200, 210 ... 248 800 ... 863, 900			*	*
<b>ADF1/2</b>	value in address field 1 or address field 2 of output telegram	Hex 00 ... FD				*
<b>minADF 1/2</b>	min. value of ADF1-range: specifies lower limit in address field 1/2 of Input telegram	Hex 00 ... FD			*	
<b>maxADF 1/2</b>	max. value of ADF1-range: specifies upper limit in address field 1/2 of Input telegram	Hex 00 ... FD			*	
<b>Sep</b>	telegram separator	M, R, U, Q, N			*	*
<b>Event</b>	event type <b>Note:</b> for event = ANY: data block A must be specifically defined but data block B may contain a wildcard (FF or **) for all events except ANY: data block A must be a wildcard but data block B may be a wildcard or may be defined according to the Telegram Tables	ANY = all events            ALM = Alarm AL1 = Alarm I                FLT = Trouble AL2 = Alarm II/Sabo        FLT = Trouble WRN= Warning                FLT = Trouble ACT = Active                 TST = Test OFF = OFF                    DRF = Drift OTH = Others RTA = FUE-Alarm RTF = FUE-Trouble			*	
<b>A/B</b>	value in data block A/B of Input telegram	Hex 00 ... FF			*	
<b>AB-On</b>	data block A /data block B: specifies data block A and data block B of output telegram transmitted when input goes active	Hex 00 ... FD				*
<b>AB-Off</b>	data block A or data block B: specifies data block A and data block B of output telegram transmitted when input goes inactive	Hex 00 ... FD				*
<b>Org</b>	organisation when input telegram must be evaluated <b>Note:</b> organisation dependent evaluation of input telegrams is only possible in sectors FIRE, BUILDING SERVICES and INTRUSION.	D = day / present N = night / not present * = organisation not relevant			*	

### 3.4. MF7033 Macro Acquisition Forms: Application Examples

#### 3.4.1. MUX-Macro Acquisition Form

see Key in Section 3.3

Macro-No	Digital Input			Telegram Output									Macro text (max. 60 characters)
McNr	Input		Edge	S	Loc	ADF1/2		Sep	AB-On		AB-Off		Doc
0001	01	01	*	E	111	E1	01	R	61	4F	61	4D	MUX-input 01 01 initiates control element active telegrams to CZ10 111 ... 113
				E	112	E1	01	R	61	4F	61	4D	
				E	113	E1	01	R	61	4F	61	4D	

#### 3.4.2. DEMUX-Macro Acquisition Form (see Section 5 Application Examples DEMUX-Macro's)

see Key in Section 3.3

Macro-No	Telegram Input										Digital Output					Macro text (max. 60 characters)	
McNr	S	Loc	minADF		maxADF		Event	Data A/B		Org	Outp		LED	Log	U	Q	Doc
0001	A	111	A1	01	A1	96	ALM	*	*	*	01	01	N	P	B	A	all fire alarms CZ10 111 ... 113
	A	112	A1	01	A1	96	ALM	*	*	*	01	02	N	P	A	A	
	A	113	A1	01	A1	96	ALM	*	*	*							
0002	A	111	A1	01	A1	96	ALM	*	01	D	01	03	N	P	B	A	all local alarms from automatic detectors CZ10 111
											01	04	N	P	A	A	
											01	05	N	P	A	I	

#### 3.4.3. TGIO-Macro Acquisition Form

see Key in Section 3.3

Macro-No	Telegram Input										Telegram Output								Macro text (max. 60 characters)	
McNr	S	Loc	minADF		maxADF		Event	A	B	Org	S	Loc	ADF1/2		Sep	AB-On		AB-Off		Doc
0001	A	111	A1	EF	A1	EF	ANY	55	60	*	A	112	A1	EF	R	55	55	55	56	Organisation of CZ10 111 switches org. of CZ10's 112, 113
											A	113	A1	EF	R	55	55	55	56	

### 3.5. MUX-Macro Acquisition Form

see Key in Section 3.3

Macro-No	Digital Input			Telegram Output								Macro text (max. 60 characters)	
McNr	Input	Edge	S	Loc	ADF1/2	Sep	AB-On	AB-Off					Doc





### 3.7. TGIO-Macro Acquisition Form

see Key in Section 3.3

Macro-No	Telegram Input									Telegram Output							Macro text (max. 60 characters)		
McNr	S	Loc	minADF		maxADF		Event	A	B	Org	S	Loc	ADF1/2	Sep	AB-On		AB-Off	Doc	

## 4. MF-Elements

### 4.1. Telegram Input Elements

Element	Application	Function	Doc. e1047 APPENDIX_G Form	Segment allocation in PLC-File (.QMC)
<b>MF_TGI2</b>	standard TGI-element	- counter oriented - static - ADF1/2 range	7.1.4	MF_Functions_FL
<b>MF_TGI2p</b>	standard TGI-element	- counter oriented - 250ms impulse - ADF1/2 range	7.1.4	MF_Functions_FL
<b>MF_TGI3</b>	evaluation of alarm telegrams according to alarm level and detector type	- counter oriented - static - ADF1/2 range	7.1.4	MF_Functions_FL
<b>MF_TGI4</b>	evaluation of status telegrams according to counter allocation	- counter oriented - static - ADF1/2 range	7.1.4	MF_Functions_FL
<b>MF_TGI5</b>	evaluation of data block A1/B1, A2/B2, VOICE-applications	- data block A/B direct - statisch - several ADF2 possible	7.1.5	MF_Functions_FL
<b>MF_TGI6</b>	evaluation of data block A/B and separator direct	- data block A/B direct - 250ms impulse - ADF2 range	7.1.6	MF_Functions_FL
<b>MF_RTC</b>	evaluation of remote transmission ALARM or TROUBLE	- counter oriented, FUE-flag - static - ADF1 range	7.1.7	MF_Functions_FL
<b>MF_ONLINE</b>	communication monitoring (presence telegrams)	output active as long as communication is O.K.	7.1.8	MF_Functions_FL
<b>MF_CAKS</b>	emulation of Cerberus Alarm Concept	- timer V1, V2 - static - output active after V1 or V2 (day) have elapsed - ADF1/2 range	7.1.9	MF_Functions_FL
<b>MF_CAKM</b>	emulation of Cerberus Alarm Concept	as MF_CAKS but several ADF2 ranges are possible	7.1.10	MF_Functions_FL
<b>F_TIM</b>	timer element initiation of an event at a specified time / date	creates a 60s impulse at a specified time	7.1.2	MF_Functions_FL
<b>F_TSW</b>	time switch element for repeated occurrences	- static - input/output time	7.1.3	MF_Functions_FL

## 4.2. Logic Elements

Element	Application	Function	Doc. e1047 APPENDIX_G Form	Segment allocation in PLC-File (.QMC)
F_EQUAL	signal distributor	1 input signal 1 ... n output signals	7.2.1	Post_Logic_FL
F_NOT	inverter	1 input signal 1 output signal	7.2.1	Pre_Logic_FL or Post_Logic_FL
F_AND	AND	2 ... n input signals 1 output signal	7.2.1	Pre_Logic_FL or Post_Logic_FL
F_OR	OR	2 ... n input signals 1 output signal	7.2.1	Pre_Logic_FL or Post_Logic_FL
F_EXOR	exclusive OR	2 input signals 1 output signal	7.2.1	Pre_Logic_FL or Post_Logic_FL
F_LATCH	latch	set/reset input 2 output signals	7.2.1	Pre_Logic_FL or Post_Logic_FL
F_COUNT	counter	creates impulse after n events	7.2.2	Pre_Logic_FL or Post_Logic_FL
F_WAIT	delay (0..16000000s)	creates a 250ms impulse after t seconds	7.2.2	Pre_Logic_FL or Post_Logic_FL
F_DELAY	delay	as F_WAIT but with programmable impulse length	7.2.2	Pre_Logic_FL or Post_Logic_FL
F_TOUT	monitoring timer	SET input starts timer  CLR input resets timer to zero  STOP input resets timer and creates impulse at STOPPED output timer elapsed creates impulse at EXPIRED output	7.2.2	Pre_Logic_FL or Post_Logic_FL

## 4.3. Telegram Output Elements

Element	Application	Function	Doc. e1047 APPENDIX_G Form	Segment allocation in PLC-File (.QMC)
MF_TGO2	transmits telegram(s)	to network CERBAN/CERLOOP	7.3.3	MF_Functions_FL
MF_TGO3	transmits telegram(s)	to itself (integrated MF)	7.3.3	MF_Functions_FL

## 4.4. Special Element

Element	Application	Function	Doc. e1047 APPENDIX_G Form	Segment allocation in PLC-File (.QMC)
MF_TGIO	transposes telegrams	trigger functionen similar to TELMON creates impulse at each trigger point	7.4.1	MF_Functions_FL

# 5. Application Examples

## 5.1. FIRE Sector

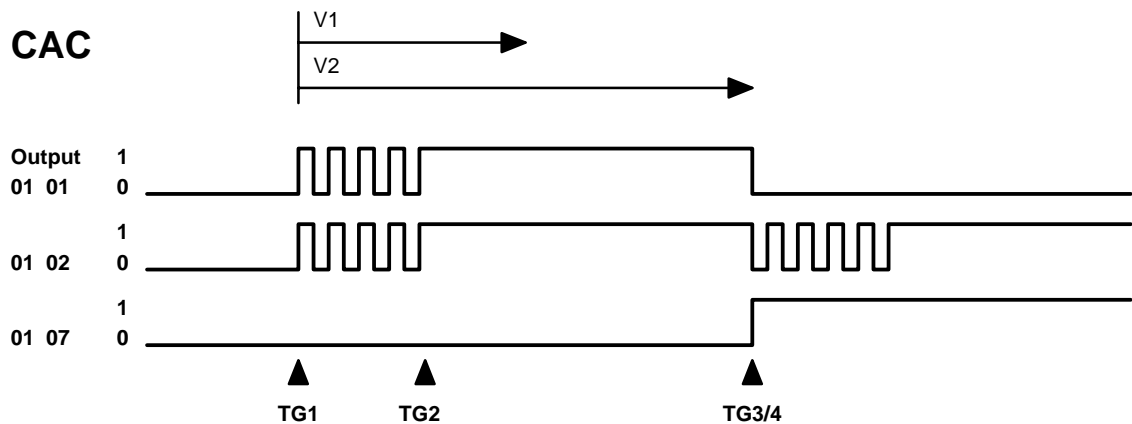
**CZ10 from SW-Version CZAX22.28 (CERBAN), CZAX23.28 (CERLOOP)**

### 5.1.1. Alarm Evaluation

*recommended programming indicated by bold print*

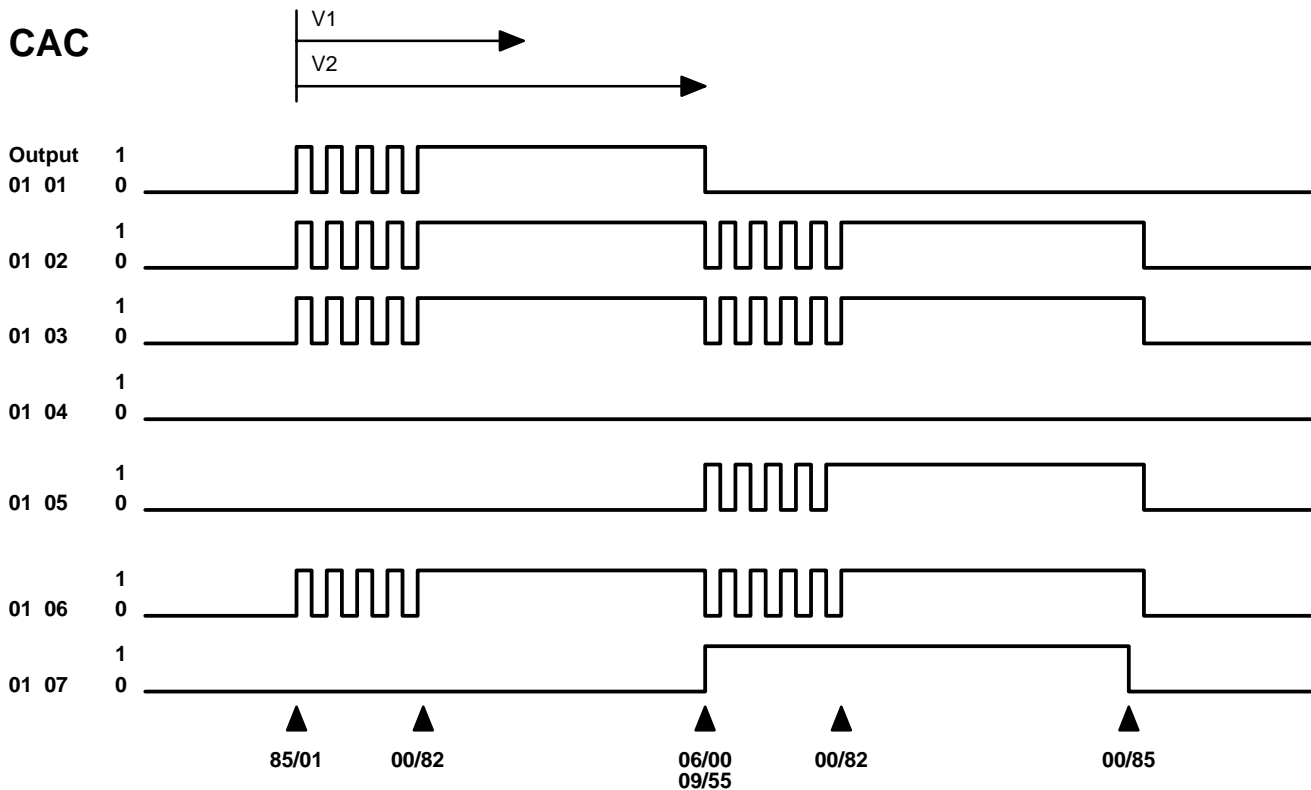
Telegram Input				Digital Output				Macro text					
McNr	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc
[- all local alarms from control unit 111 -]													
0001	A	111	A1 01	A1 96	<b>AL1</b>	** ** *	*	01 01	N	P	B	A	Alarm I
[- all local alarms, autom. detectors from control unit 111 -]													
0002	A	111	A1 01	A1 96	<b>ALM</b>	** 01	D	01 02	N	P	B	A	Alarm AM
[- all alarms from autom. detectors (incl. general alarm after V1, V2 elapsed) from control unit 111 -]													
0003	A	111	A1 01	A1 96	<b>ALM</b>	** 01	*	01 03	N	P	B	A	Alarm AM
[- all alarms from manual call points from control unit 111 -]													
0004	A	111	A1 01	A1 96	<b>ALM</b>	** 02	*	01 04	N	P	B	A	Al.II AT
[- all alarms (incl. general alarm after V1, V2 elapsed) from control unit 111 -]													
0006	A	111	A1 01	A1 96	<b>ALM</b>	** ** *	*	01 06	N	P	B	A	Alarm
[- remote transmission ON from control unit 111 -]													
0007	A	111	A1 00	A1 00	<b>RTA</b>	** ** *	*	01 07	N	P	A	A	Remote Transm.

**Note: General Alarm (06 00) overwrites Local Alarm**



- TG1: A111A125M8501 local alarm auto. detector
- TG2: A111A100M0082 alarm acknowledged
- TG3: A111A1CDM0600 general alarm
- TG4: A111A100M0955 remote transmission ON

## 5.1.2. Alarm Evaluation Organisation Day



Telegram sequence	McNr	0001	0002	0003	0004	0005	0006
-------------------	------	------	------	------	------	------	------

### Organisation Day

A111A125M8501	prealarm AM	B	B	B	I	I	B
A111A100M0082	alarm acknowledged	A	A	A	I	I	A
A111A1CDM0600	general alarm	I	B	B	I	B	B
A111A100M0082	alarm acknowledged	I	A	A	I	A	A
A111A100M0085	alarm reset	I	I	I	I	I	I

### Organisation Night

A111A125M8601	general alarm AM	I	I	B	I	B	B
A111A100M0082	alarm acknowledged	I	I	A	I	A	A
A111A100M0085	alarm reset	I	I	I	I	I	I

### Organisation Day or Night

A111A125M8602	general alarm AT	I	I	I	B	I	B
A111A100M0082	alarm acknowledged	I	I	I	A	I	A
A111A100M0085	alarm reset	I	I	I	I	I	I

I=inactive, B=flashing, A=active

### 5.1.3. Trouble Evaluation

McNr	Telegram Input						Digital Output				Macrotext		
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc
[- all troubles in basic sector -]													
0008	0	111	00	00	00 0F	FLT	** ** *	01 11	N	P	A	A	trb.basic
[- CZ10 111 all troubles in sector fire -]													
0009	A	111	A1	ED	A1 ED	FLT	** ** *	01 12	N	P	A	A	trb.fire
[- CZ10 111 all zone troubles in sector fire -]													
0010	A	111	A1	01	A1 96	FLT	** ** *	01 13	N	P	A	A	trb.zones
[- CZ10 111 all detection device troubles -]													
0011	A	111	01	01	24 50	FLT	** ** *	01 14	N	P	A	A	trb.dev.
[- CZ10 111 external trouble -]													
0012	A	111	A1	CE	A1 CE	FLT	** ** *	01 15	N	P	A	A	trb.extern.
[- CZ10 111 remote transmission trouble ON -]													
0013	A	111	A1	E9	A1 E9	RTF	** ** *	01 16	N	P	A	A	RT trb.

### 5.1.4. Status Message Evaluation

McNr	Telegram Input						Digital Output				Macrotext		
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc
[- CZ10 111 part of system OFF in basic sector -]													
0014	0	111	00	00	00 0F	OFF	** ** *	01 21	N	P	A	A	part of sys. off
[- CZ10 111 part of system OFF in sector fire -]													
0015	A	111	A1	EC	A1 EC	OFF	** ** *	01 22	N	P	A	A	part of sys. off
[- CZ10 111 zone(s) off -]													
0016	A	111	A1	01	A1 96	OFF	** ** *	01 23	N	P	A	A	zones off
[- CZ10 111 detection device(s) off -]													
0017	A	111	01	01	24 50	OFF	** ** *	01 24	N	P	A	A	devices off
[- CZ10 111 organisation night -]													
0018	A	111	A1	EF	A1 EF	ANY	55 60 *	01 31	N	P	A	A	Org. night
[- CZ10 111 organisation day -]													
0019	A	111	A1	EF	A1 EF	ANY	55 61 *	01 32	N	P	A	A	Org. day
[- CZ10 111 online -]													
0020	0	111	00	00	00 0F	ANY	39 00 *	01 33	N	P	A	A	online

## 5.2. Extinguishing Sector

**CZ10 from SW-Version CZAX22.28 (CERBAN), CZAX23.28 (CERLOOP)**

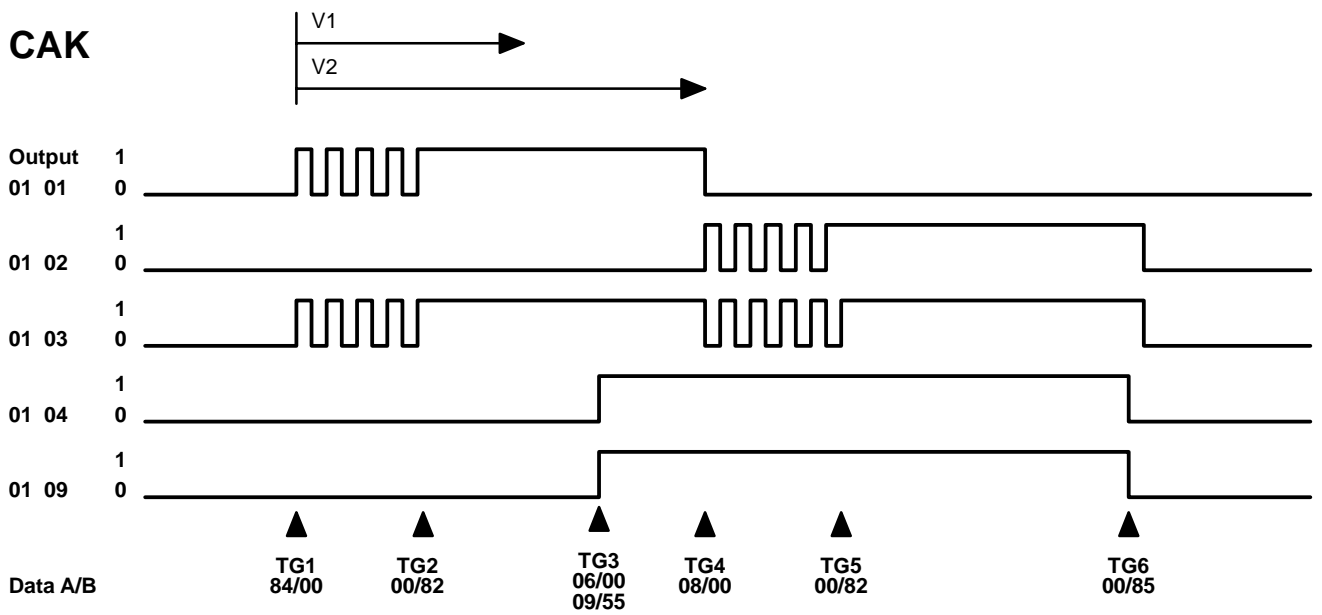
### 5.2.1. Evaluation

McNr	Telegramm Input					Digital Output					Macrotext		
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc
[- CZ10 112 B1..B8 extinguishing prealarm -]													
0001	B	112	B1	EB	B8 EB	AL1	** ** *	01 01	N	P	B	A	Prealarm
[- CZ10 B1..B8 extinguishing alarm -]													
0002	B	112	B1	EB	B8 EB	AL2	** ** *	01 02	N	P	B	A	exting. alarm
[- CZ10 112 B1..B8 extinguishing prealarm or extinguishing alarm -]													
0003	B	112	B1	EB	B8 EB	ALM	** ** *	01 03	N	P	B	A	pre- or exting.
[- CZ10 B1..B8 extinguishing general alarm (V1 or V2 elapsed) -]													
0004	B	112	B1	CD	B8 CD	ANY	06 00 *	01 04	N	P	A	A	general alarm
[- CZ10 112 B1..B8 release automatic action disabled -]													
0005	B	112	B1	AE	B8 AE	OFF	** 5B *	01 05	N	P	A	A	release disabled
[- CZ10 112 B1..B8 release disabled -]													
0006	B	112	B1	AE	B8 AE	OFF	** 5D *	01 06	N	P	A	A	release disabled
[- CZ10 112 B1..B8 release automatic action disabled or release disabled -]													
0007	B	112	B1	AE	B8 AE	OFF	** ** *	01 07	N	P	A	A	disabled
[- CZ10 112 B1..B8 trouble -]													
0008	B	112	B1	ED	B8 ED	FLT	** ** *	01 08	N	P	A	A	trouble
[- CZ10 112 B1..B8 alarm remote transmission on -]													
0009	B	112	B1	00	B8 00	RTA	** ** *	01 09	N	P	A	A	transm. alarm
[- CZ10 112 B1..B8 remote transmission module trouble on -]													
0010	B	112	B1	E9	B8 E9	RTF	** ** *	01 10	N	P	A	A	RT trouble

**Notes: Prealarm will be overwritten by extinguishing alarm.**



## 5.2.2. Evaluation Prealarm, General Alarm, Extinguishing Alarm (organisation day)



### Telegram sequence with CZ1-02

```

Tg1> L112B5EBM8400      prealarm ***
Tg2> L112B500M0082      message acknowledged
Tg2> L1120000M0082      message acknowledged
    > L112B5CDM0084      message general alarm imminent
Tg3> L112B5CDM0600      general alarm ***
Tg3> L112B500M0955      remote transmission ON
Tg4> L112B5EBM0800      extinguishing alarm ***
Tg5> L112B500M0082      message acknowledged
Tg5> L1120000M0082      message acknowledged
Tg6> L112B500M0085      message reset
Tg6> L1120000M0085      message reset

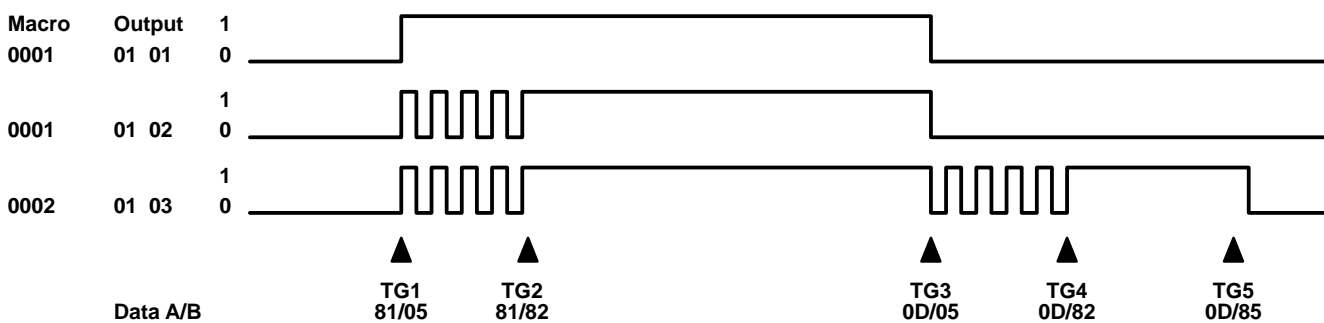
```

## 5.3. Intrusion Sector

### 5.3.1. Alarm and Sabotage Evaluation

McNr	Telegram Input					Digital Output					Macrotext		
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc
[- alarm zone 2 addr.45 (will be overwritten by alarm+sabotage!) -]													
0001	C	111	02	45	02 45	AL1	** ** *	01 01	N	P	A	A	Al.Addr.45
								01 02	N	P	B	A	
[- alarm+subsequent alarm when sabotage zone 2 Addr.45,46 pending -]													
0002	C	111	02	45	02 46	AL1	** ** *	01 03	N	P	B	A	Al.Addr.45,46
	C	111	02	45	02 46	ANY	8D ** *						
[- sabotage zone 2 Addr.45,46 (will be overwritten by alarm+sabotage!) -]													
0003	C	111	02	45	02 46	AL2	** ** *	01 04	N	P	A	A	SabAddr.45,46
[- sabotage+subsequent sabotage when alarm zone 2 Addr.45,46 pending -]													
0004	C	111	02	45	02 46	AL2	** ** *	01 05	N	P	A	A	SabAddr.45,46
	C	111	02	45	02 46	ANY	8D ** *						
[- Alarm, sabotage and alarm+sabotage zone 2 Addr.45,46 -]													
0005	C	111	02	45	02 46	ALM	** ** *	01 06	N	P	A	A	Al.Addr.45,46
[- all alarms, sabotages and alarm+sabotage from CZ12 111 -]													
0006	C	111	00	D3	00 D8	ALM	** ** *	01 07	N	P	A	A	Alarm,Sabo
	C	111	01	01	64 96	ALM	** ** *						
[- all alarm/sabotage/alarm+sabotage break-ins CZ12 111 -]													
0007	C	111	01	01	64 96	ALM	** 05 *	01 08	N	P	A	A	Intrusion
[- all alarms und alarm+sabatage hold-ups CZ12 111 -]													
0008	C	111	01	01	64 96	AL1	** 06 *	01 09	N	P	A	A	Hold-up
	C	111	01	01	64 96	ANY	8D 06 *						
[- all sabotages and alarm+sabotage theft CZ12 111 -]													
0009	C	111	01	01	64 96	AL2	** 07 *	01 10	N	P	A	A	Threat
	C	111	01	01	64 96	ANY	8D 07 *						

**Notes: Alarm (AL1) and sabotage (AL2) will be overwritten by alarm+sabotage.**



### 5.3.2. Special Alarm and Sabotage Evaluation

McNr	Telegram Input					Digital Output				Macrotext			
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc
[- alarm keying error CZ12 111 -]													
0010	C	111	00	D7	00 D7	ALM	** ** *	01 11	N	P	A	A	keying error
[- alarm time lock CZ12 111 -]													
0011	C	111	00	D6	00 D6	ALM	** ** *	01 12	N	P	A	A	time lock
[- sabotage general -]													
0012	C	111	00	D5	00 D5	ALM	** ** *	01 13	N	P	A	A	Sabo.gen.
[- sabotage control unit, control unit protection CZ12 111 -]													
0013	C	111	00	D4	00 D4	ALM	** ** *	01 14	N	P	A	A	Sabo.contr unit
[- false code alarm CZ12 111 -]													
0014	C	111	00	D3	00 D3	ALM	** ** *	01 15	N	P	A	A	Code-Alarm
[- alarm threat CZ12 111 -]													
0015	C	111	00	D8	00 D8	ALM	** ** *	01 16	N	P	A	A	Threat

### 5.3.3. Trouble and Status Message Evaluation

McNr	Telegram Input					Digital Output				Macrotext			
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc
[- all troubles CZ12 111 -]													
0016	0	111	00	00	00 0F	FLT	** ** *	01 17	N	P	A	A	trouble
[- CZ12 111 zone(s)2 off -]													
0017	C	111	02	00	02 00	OTH	** ** *	01 18	N	P	A	A	zone 2 off
[- CZ12 111 zone(s) in test -]													
0018	C	111	01	00	64 00	TST	** ** *	01 19	N	P	A	A	test
[- CZ12 111 zone 2 detector address(es) 45,46 excluded -]													
0019	C	111	02	45	02 46	OFF	** 5E *	01 20	N	P	A	A	Addr. off
[- CZ12 111 zone 2 detector address(es) 45,46 illegal off -]													
0020	C	111	02	45	02 46	OFF	** 66 *	01 21	N	P	A	A	illegal off
[- CZ12 111 zone 2 detector address(es) 45,46 excluded or illeg.off -]													
0021	C	111	02	45	02 46	OFF	** ** *	01 22	N	P	A	A	excluded/ill.off
[- CZ12 111 zone 2 detector address(es) 45,46 not ready -]													
0022	C	111	02	45	02 46	ACT	** 5F *	01 23	N	P	A	A	not ready
[- CZ12 111 zone 2 detector address(es) 45,46 test alarm -]													
0023	C	111	02	45	02 46	ACT	** 0B *	01 24	N	P	A	A	test alarm
[- CZ12 111 zone 2 detector address(es) 45,46 not ready or test alarm -]													
0024	C	111	02	45	02 46	ACT	** ** *	01 25	N	P	A	A	not ready/testalarm

### 5.3.4. Trouble and Status Message Evaluation (cont.)

McNr	Telegram Input						Digital Output				Macrotext						
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc				
[- CZ12 111 zone.2 detector addresses 45,46 Test -]																	
0025	C	111	02	45	02	46	TST	**	**	*	01	26	N	P	A	A	addr.test
[- CZ12 111 organisation not present -]																	
0026	C	111	00	EF	00	EF	ANY	55	60	*	01	27	N	P	A	A	not present
[- CZ12 111 organisation switch-over not completed -]																	
0027	C	111	00	EF	00	EF	ACT	**	**	*	01	28	N	P	A	A	not completed
[- CZ12 111 organisation present -]																	
0028	C	111	00	EF	00	EF	ANY	55	61	*	01	29	N	P	A	A	present
[- CZ12 111 control unit protection on -]																	
0029	C	111	00	D4	00	D4	ANY	58	56	*	01	30	N	P	A	A	con.unit prot.
[- CZ12 111 control unit protection off -]																	
0030	C	111	00	D4	00	D4	OFF	**	56	*	01	31	N	P	A	A	con.unit prot.
[- CZ12 111 control unit protection illegal off -]																	
0031	C	111	00	D4	00	D4	OFF	**	66	*	01	32	N	P	A	A	con.unit prot.
[- CZ12 111 control unit protection off or illegal off -]																	
0032	C	111	00	D4	00	D4	OFF	**	**	*	01	33	N	P	A	A	con.unit prot.
[- CZ12 111 lock-up check Addr.46 active (belonging to zone off) -]																	
0033	C	111	EF	46	EF	46	ANY	58	56	*	01	34	N	P	A	A	lock-up active
[- CZ12 111 lock-up check Addr.46 warning (belonging to zone on) -]																	
0034	C	111	EF	46	EF	46	ACT	**	**	*	01	35	N	P	A	A	lock-up warning
[- CZ12 111 one or more user logged in -]																	
0035	C	111	EE	01	EE	31	ACT	**	**	*	01	36	N	P	A	A	user log. in
[- CZ12 111 part of system off -]																	
0036	C	111	00	EC	00	EC	ANY	75	3A	*	01	37	N	P	A	A	par.o.sys. off

### 5.3.5. Evaluation remote transmission alarm and remote transmission trouble

McNr	Telegram Input						Digital Output				Macrotext						
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc				
[- CZ12 111 Remote transmission alarm active -]																	
0037	C	111	00	EA	00	EA	RTA	**	**	*	01	41	N	P	A	A	RT alarm
[- CZ12 111 remote transmission trouble active -]																	
0038	0	111	00	00	00	0F	RTF	**	**	*	01	42	N	P	A	A	RT trouble

## 5.4. Gas Sector

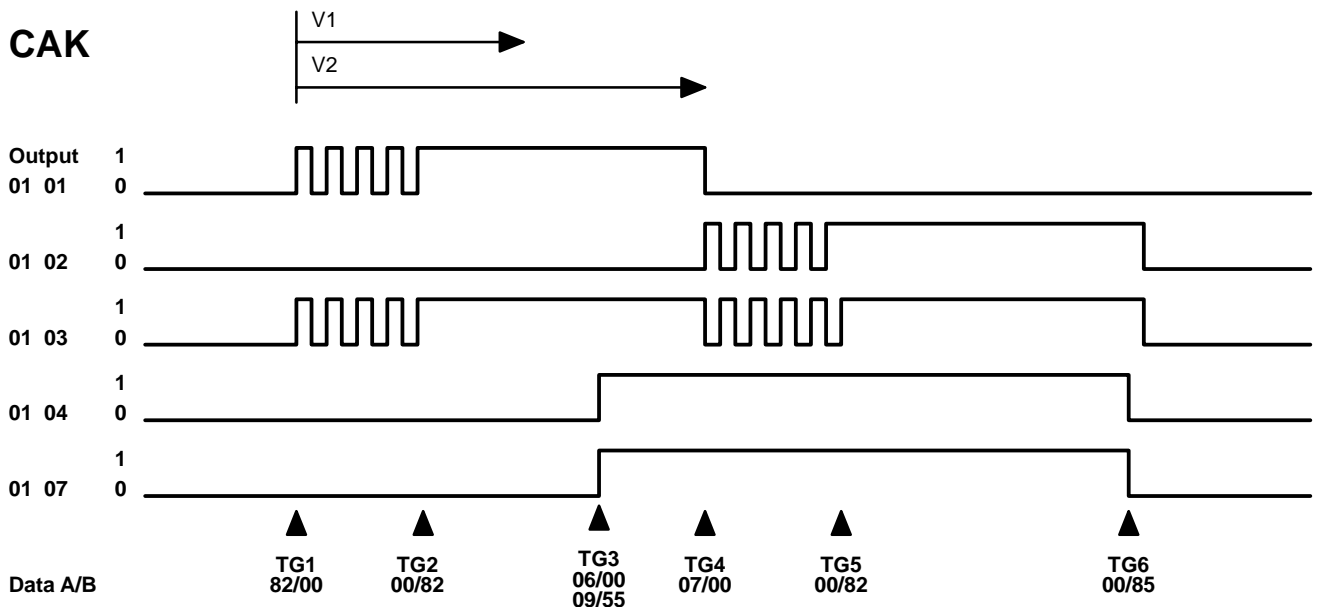
**CZ10 from SW-Version CZAX22.28 (CERBAN), CZAX23.28 (CERLOOP)**

### 5.4.1. Evaluation

McNr	Telegram Input						Digital Output				Macrotext		
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc
[- CZ10 112 Gas D1..D8 pre-warning -]													
0001	D	112	D1	EB	D8 EB	AL1	** ** *	01 01	N	P	B	A	prewarning
[- CZ10 Gas D1..D8 gas alarm -]													
0002	D	112	D1	EB	D8 EB	AL2	** ** *	01 02	N	P	B	A	gas alarm
[- CZ10 112 Gas D1..D8 pre-warning or gas alarm -]													
0003	D	112	D1	EB	D8 EB	ALM	** ** *	01 03	N	P	B	A	prewar.or.gasa.
[- CZ10 Gas D1..D8 general alarm (elapsed V1 or V2) -]													
0004	D	112	D1	CD	D8 CD	ANY	06 00 *	01 04	N	P	A	A	general alarm
[- CZ10 Gas D1..D8 part of system off -]													
0005	D	112	D1	EC	D8 EC	OFF	** ** *	01 05	N	P	A	A	part sys off
[- CZ10 112 Gas D1..D8 trouble -]													
0006	D	112	D1	ED	D8 ED	FLT	** ** *	01 06	N	P	A	A	trouble
[- CZ10 112 Gas D1..D8 alarm remote transmission on -]													
0007	D	112	D1	00	D8 00	RTA	** ** *	01 07	N	P	A	A	RT alarm
[- CZ10 112 Gas D1..D8 remote transmission trouble on -]													
0008	D	112	D1	E9	D8 E9	RTF	** ** *	01 08	N	P	A	A	RT trouble

**Notes: Prealarm will be overwritten by gas alarm.**

### 5.4.2. Evaluation prealarm, general alarm and gas alarm (organisation day)



## 5.5. Building Services Sector

### 5.5.1. Section E1 Evaluation

McNr	Telegram Input						Digital Output				Macrotext						
	S	Loc	minADF	maxADF	Event	A/B	Org	Output	LED	Log	U	Q	Doc				
[- CZ10 112 E90CI control device (L.01/E1.10) active -]																	
0001	E	112	01	10	01	10	ACT	**	**	*	01	01	N	P	A	A	E90CI active
[- CZ10 112 E90CI control device (L.01/E1.10) operation confirmed -]																	
0002	E	112	01	10	01	10	ANY	68	63	*	01	02	N	P	A	A	E90CI reset
[- CZ10 112 E90CI control device (L.01/E1.10) transmission trouble -]																	
0003	E	112	01	10	01	10	FLT	**	**	*	01	03	N	P	A	A	E90CI trouble
[- CZ10 112 E4G 030/E4G 040 signal contact(s) active -]																	
0004	E	112	E1	01	E1	96	ACT	**	**	*	01	04	N	P	A	A	active

**Evaluation of Building Services section E2 similar to Fire sector**

## 6. Environmental Specifications

	max. values	id letter
operating temperature (Z depends on the housing dimensions)	0°C ... +30°C	KZ
storage temperature: Exceptions: for battery for disk	-40°C ... +60°C -10°C ... +35°C	GU JZ
Humidity Specification annual average maximum	NO CONDENSATION  < 75% < 95%	F
mechanical specification: in a vibration-free system	10 ... 55 Hz 2 g 20 m/S	W
Dust Conditions: ambient air	dust free	
direct sunlight	not permitted	
housing requirement according to DIN 40050	IP20	

**Note:**

**Conditions to which equipment modules may be subjected are in accordance with application classes listed in DIN 40040**

# 7. Power Supply

## 7.1. Basis

Battery capacity  $Q$  [Ah] for emergency power duration  $t$  [h]

$$Q = t \times 1,3 \times I_{24} \text{ [Ah]}$$

1,3 safety factor

$I_{24}$  battery charging current < 5A

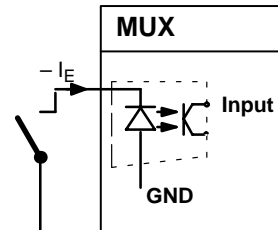
**Note:**

Emergency power capacity has a major influence on mechanical design.

### 7.1.1. Control Principle of MUX/DMX Modules

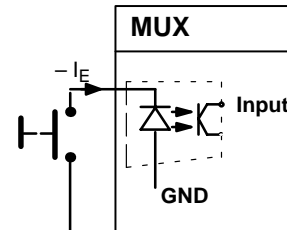
#### Signal line MLE

Input signal "static" (switch) 1)



-  $U_E = 17 \dots 29V$  DC  
-  $I_E = 1mA$

Input signal "dynamic" (button) 1)

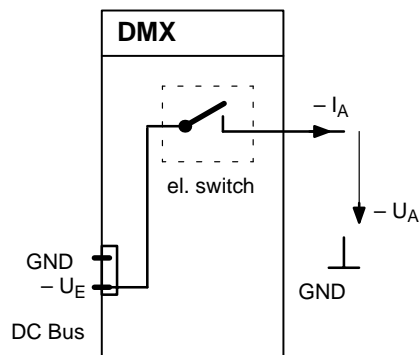


-  $U_E = 17 \dots 29V$  DC  
-  $I_E = 1mA$

1) specified in configuration form MF7033/SWE700FT MUX-Macro (edge)

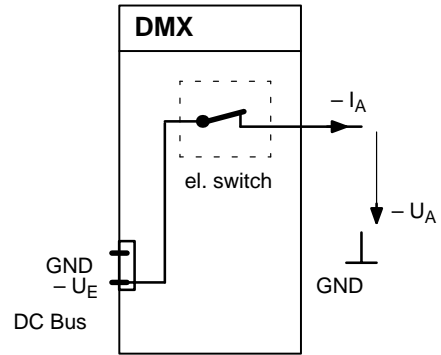
#### Control line SLA

open circuit principle 2)



output active: negative potential to GND

closed circuit principle 2)



output inactive: negative potential to GND

2) specified in configuration form MF7033/SWE700FT DEMUX-Macro (log)

Module E2A 032  
Module E2A 031

:  $-U_A = -U_E = 5 \dots 29V$  DC ;  $I_{Amax} = 40mA$   
:  $-U_A = -U_E = 17 \dots 29V$  DC ;  $I_{Amax} = 40mA$



## 7.2. Nominal Current Consumption

### 7.2.1. Nominal Values, battery capacity

Emergency power duration	[h]	4	12	24
Load current (CERBAN oder CERLOOP)	[A]	1,8 1)		
Battery capacity	[Ah]	24	48	72

1) Load current with 1 MUX and 2 DMX cards and 20 LED's or relays activated

### 7.2.2. Table

Components	Current consumption $I_{24}$		Power dissipation $P_v$	
	per number 1)	total 2)	per numbe 3)	total 4)
Base load		1,3		37
CERBAN / CERTER V24	_____ x 0,07		_____ x 1	
CERBAN FSK/PSK	_____ x 0,12		_____ x 7	
MK7011 (CERLOOP V24/PSK)	_____ x 0,12		_____ x 7	
MD7002 (CERBAN V24/FSK/PSK)	_____ x 0,12		_____ x 7	
MUX-Module	_____ x 0,03		_____ x 1	
Line Monitoring Adapter	_____ x 0,32		_____ x 9	
DMX-Module 5)	_____ x 0,03		_____ x 1	
Open-current principle 5)	_____ x _____		_____ x _____	
Closed-current principle per LED	_____ x 0,02		_____ x 0,6	
Closed-current principle per relay	_____ x 0,02		_____ x 0,6	
DMX-Module (per p.c.b.)	_____ x 0,03		_____ x 1	
Display Test Field		0,03	_____ x 9	
<b>Total</b>				

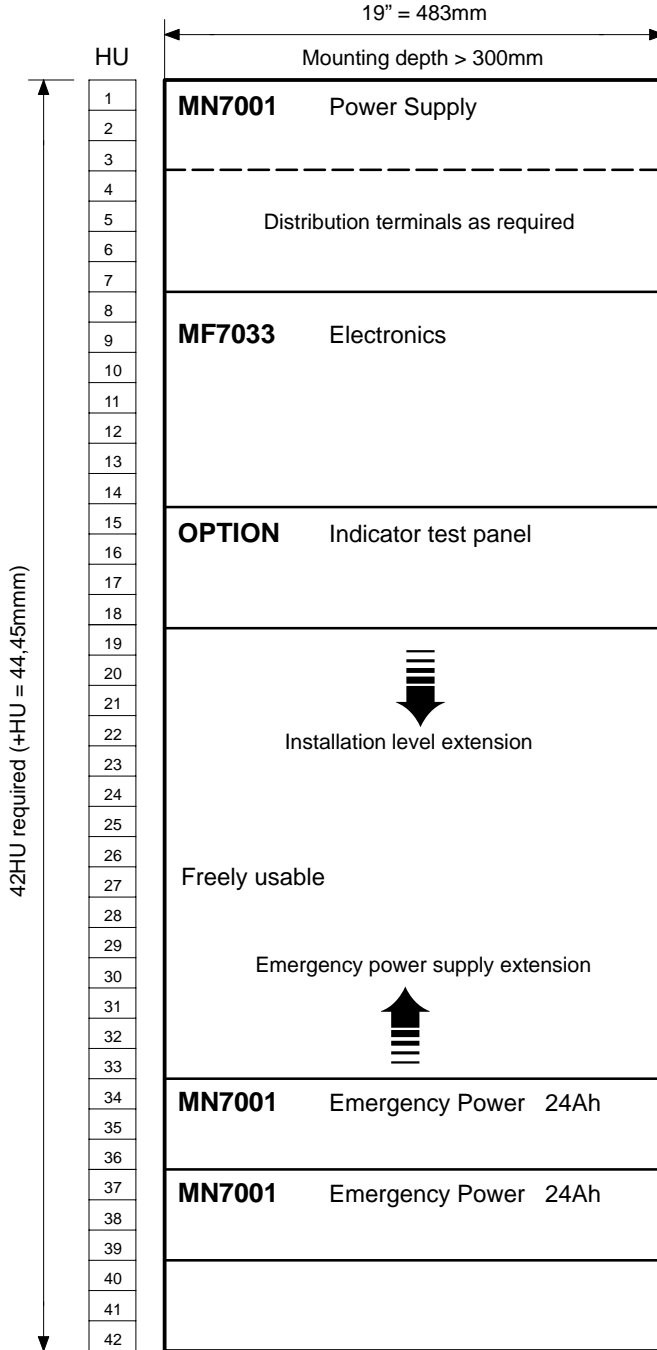
- 1) Current consumption is a fuction of the number of components to be used
- 2) Given load current from the battery (+/- 24V DC)
- 3) Given power dissipation as a function of the number of components to be used
- 4) Power dissipation in housing (+/- 28V DC = system voltage)
- 5) The sum of LED's or relays simultaneously activated

#### Notes:

- For details of the space requirement for the emergency power supply and size of housing as a fuction of power dissipation, see User Manual MN7000.

# 8. Space Requirement and Basic Design

See product data sheets (x185/x195/x381) for housings and 19" standard cabinets.  
 Number of cabinets depends on the required emergency power supply.  
 See User Manual MN7000-... for power supply details.





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