

SIEMENS

**MK7000
Network**

**Communication Module
Modem Application**

Building Technologies

Fire Safety & Security Products

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1 DMS7000 Network Structures

1.1 Transmission Links

A communication network consists of transmission links between the Control Units and the DMS7000 Control Centre. Several transmission types are available.

- **Communication network CERBAN** (star connections)
Point-to-point connection between Control Units and Danger Management System.
- **Communication network CERLOOP** (ring connections)
All network members connected directly to a common bus.
- **Communication network CERTER** (star connections)
Normally restricted to serial interface connections to printers or interfaces between Central Processor and System Console.

1.2 Transmission Modes

Various types of modem are available and selection criteria include the required transmission distance, the baud rate and local telephone authority regulations.

- **V24/28 Modem (RS232) [signal level converter]**
Single or dual Modems for 4-wire connections up to 1000m depending on the application: may be used in CERBAN, CERLOOP or CERTER.
- **FSK/PSK/QAM Modem**
Single or dual Modems for 2-wire connections up to 10'000m depending on the application: may be used in CERBAN or CERLOOP. The modems must be programmed for the specific application (DIL-switches).

The following tables provide an overview over the various modem types, showing relevant applications and intercompatibility between individual modems.

2 Modem Applications

2.1 Modem selection according to network application

currently available modems are printed in **bold type**

modem	part no.	norm	baud rate	transmission mode	interface type				
					CERBAN interface		CERLOOP	CERTER	CERX.25
					end (CGE)	front (CGF)			
K1D 010	1)	V28	300 1200	Signal level converter	x 0	x 0		0 x	0 x
K1D 011	3620940001 1)	V28	300 1200 2400 4800	Signal level converter	x 0 0 0	x 0 0 0		x x 0 0	0 x x x
K1D 012	4637600001	V28	300 600 1200 2400 4800	Signal level converter	x x 0 0 0	x x 0 0 0		x x x 0 0	0 0 x x x
K1D 020	1)	Bell 103	300	FSK Frequency Shift Keying		x			
K1D 040	1)	Bell 103	300	FSK Frequency Shift Keying	x				
K1D 080	3610660001 1)	V28	1200	Signal level converter	x	x	x	x	x
K1D 081	4637730001	V28	300 600 1200 2400 4800	Signal level converter	x x 0 0 0	x x 0 0 0	0 0 x x 0	x x x 0 0	0 0 x x x
E8D 010	1)	V28	300	Signal level converter	x				
K1D 090	3699320001 1)	Bell 103	300	FSK Frequency Shift Keying	x	x			
K1D 120	1)	Bell 103 V.22	300 1200	FSK Frequency Shift Keying DPSK Differential Frequency Shift Keying	x 0	x 0	0 x	0 x	0 x
K1D 121	4706010001	V.21 V.22 V.22 V.22 bis	300 600 1200 2400	FSK Frequency Shift Keying DPSK Differential Phase Shift Keying DPSK Differential Phase Shift Keying QAM Quadrature Amplitude Modulation	x x 0 0	x x 0 0	0 0 x x	0 0 x x	0 0 x x
K1D 140	4706140001	V.21 V.22 V.22 V.22 bis	300 600 1200 2400	FSK Frequency Shift Keying DPSK Differential Phase Shift Keying DPSK Differential Phase Shift Keying QAM Quadrature Amplitude Modulation	x x 0 0	x x 0 0			0 0 x x
E8D 020	1)	V.21	300	FSK Frequency Shift Keying	x				

1) no longer available

Note :

- **baud rates are limited by the equipment application and must be selected via hardware programming (DIL-switch or links etc.)**
- **only Modems K1D 120, K1D 121 and K1D 140 can be programmed in this way**

2.2 Modem selection according to transmission distance

currently available modems are printed in **bold type**

distance	normal lines					PTT lines				
	CERBAN 300 Bd	CERBAN 600 Bd	CER- LOOP 1200 Bd 2400 Bd	CERTER 1200 Bd 2400 Bd	CERTER 4800 Bd 9600 Bd	CERBAN 300 Bd	CERBAN 600 Bd	CER- LOOP 1200 Bd 2400 Bd	CERTER 1200 Bd 2400 Bd	CERTER 4800 Bd 9600 Bd
250m	K1D 010 K1D 011 K1D 012 K1D 080 K1D 081 E8D 010	K1D 011 K1D 012 K1D 080 K1D 081 E8D 010	K1D 080 K1D 081	K1D 010 K1D 011 K1D 012 K1D 080 K1D 081	K1D 011 K1D 012 K1D 080 K1D 081	K1D 090 K1D 121 K1D 140	K1D 121 K1D 140	K1D 121	K1D 121 K1D 140	foreign
1 km	K1D 010 K1D 011 K1D 012 K1D 080 K1D 081 E8D 010	K1D 011 K1D 012 K1D 080 K1D 081	K1D 080 K1D 081	K1D 010 K1D 011 K1D 012 K1D 080 K1D 081	foreign	K1D 090 K1D 121 K1D 140	K1D 121 K1D 140	K1D 121	K1D 121 K1D 140	foreign
10 km	K1D 040 K1D 090 K1D 120 K1D 121 K1D 140 E8D 020	K1D 121 K1D 140	K1D 120 K1D 121	K1D 120 K1D 121	foreign	K1D 090 K1D 121 K1D 140	K1D 121 K1D 140	K1D 121	K1D 121 K1D 140	foreign
>10 km	foreign	foreign	foreign	foreign	foreign	foreign	foreign	foreign	foreign	foreign

!! PTT-approval for Modem K1D 140 and K1D 121 from Index a !!

Note:

- in applications using **foreign modems**, an additional K1D 011/12/080/081 modem is required to provide a standard voltage level interface.
- for connections to **printers** only modems K1D 011/12 or K1D 080/081 may be used

2.3 Modem Inter-Compatibility

2.3.1 V24/28 Modems

currently available modems are printed in **bold type**

Type	K1D 010	K1D 011	K1D 012	K1D 080	K1D 081	E8D 010
K1D 010	1	1	1	1	1	1
K1D 011	1	1	1	1	1	1
K1D 012	1	1	1	1	1	1
K1D 080	1	1	1	1	1	1
K1D 081	1	1	1	1	1	1
E8D 010	1	1	1	1	1	0

1 = permitted; 0 = not permitted

2.3.2 FSK/PSK/QAM Modems

currently available modems are printed in **bold type**

Type	K1D 020	K1D 040	K1D 090	K1D 120	K1D 121	K1D 140	E8D 020
K1D 020	0	1	1	0	0	0	1
K1D 040	1	0	1	0	0	0	0
K1D 090	1	1	1	0	0	0	1
K1D 120	0	0	0	1	1 (PSK) 0 (FSK)	1 (PSK) 0 (FSK)	0
K1D 121	0	0	0	1 (PSK) 0 (FSK)	1	1	0
K1D 140	0	0	0	1 (PSK) 0 (FSK)	1	1	0
E8D 020	1	0	1	0	0	0	0

1 = permitted; 0 = not permitted

2.4 Transmission Equipment

The following specifications and parameter definitions provide the necessary background information for project engineers and service technicians working with DMS7000 Danger Management Systems

2.4.1 CCITT-specifications

Equipment connections are based on the CCITT-V24 recommendations which include all possible interface lines together with their functional descriptions. However they do not specify which connections should be used for specific applications.

In comparison with the CCITT-V24 recommendations, the CERBERUS V24-interface has been greatly simplified, using only 7 of the recommended 22 connections.

Foreign modems which fulfill the following specification may also be used:

- asynchronous full duplex
- standard data transmission rate of 300, 600, 1200, 2400, 4800, 9600 Baud.

(Note: conversion to TTL-level via CERBERUS-Modem necessary)

Modem Header (TTL-Level!)

	K1D 010 K1D 011 K1D 080 K1D 090 K1D 120	K1D 080 K1D 120	K1D 012 K1D 140	K1D 081 K1D 121	K1D 081	
PIN	A1	A2	A1/2	A1/2	A2	
1	+5Vdc	+5Vdc	+5Vdc	+5Vdc	+5Vdc	
2	NC	NC	NC	NC	NC	
3	TxD1	TxD2	TxD1	TxD1	TxD2	Transmit Data
4	RxD1	RxD2	RxD1	RxD1	RxD2	Receive Data
5	RTS1	RTS2	NC	RTS1	NC	Clear Watch-Dog
6	NC	NC	NC	NC	NC	
7	GND	GND	GND	GND	GND	
8	NC	NC	+5Vdc	+5Vdc	NC	
9	DCD	DCD		NC	NC	
10	NC	NC		TxD2	NC	Transmit Data
11	NC	NC		RxD2	NC	Receive Data
12	NC	NC		RTS2	NC	Ready to Send
13	CTS1	CTS2		NC	NC	Clear to Send
14	NC	NC		GND	NC	

2.4.2 Transmission protocol

Parameter	Network			
	CERBAN	CERLOOP	CERTER	CERX.25
transmission procedure	Start – Stop according to DIN66003			
data transmission rate	300/600Bd	1200/2400Bd	1200Bd	1200 ... 4800Bd
telegram length: info. element only	13 characters	7 characters		---
data check	running parity DIN 66219/Ab. 3	2 Byte CRC-characters DIN 66219/Ab. 4		2 Byte CRC-characters DIN 66219/Ab. 4
data transmission	code dependent in accordance with DIN 66219/Ab.3	code independent in accordance with DIN 66219/Ab.3		
character format	1 start bit 7 data bits even parity 2 stop bits	1 start bit 8 data bits even parity 2 stop bits	1 start bit 7 data bits even parity 2 stop bits	1 start bit 8 data bits – 2 stop bits
transmission mode	asynchronous, bit serial, full duplex			

2.4.3 Table showing data-formats used in DMS7000

Equipment / Connection	Baud-rate								Format		Level
	19k2	9600	4800	2400	1200	600	300	Bits	Prty	Stop	
CERLOOP Network				X	D			8	E	1	MOD
CERLOOP local interface						X	D	8	E	1	TTL
CERBAN							D	7	E	2	MOD
CT100-11 Processor A <--> B			HDLC						NRZI		TTL
CT100-11 Processor B <--> C		D						8	–	1	MOD
CT100-11 Processor C <--> B3Q 071		D						8	–	1	MOD
CP100-11 to CA/CT100-11					D			7	E	2	MOD
CP100-02 to CA/CT100-11					D			7	E	2	MOD
MC7033 <--> MA7003			D	X	X			8	–	1	MOD
MC7033 <--> MA7013			D	X	X			8	–	1	MOD
MC7033 <--> MA7033			D	X	X			8	–	1	MOD
CP100-11 to DMS7000					D			8	–	2	MOD
CP100-02 to DMS7000					D			8	–	2	MOD
MA7013 to B3Q 071 (new)		D						8	–	1	MOD

D = default, X = optional, E = even parity, MOD = CERBERUS Modem K1D..., TTL = TTL-level

Signal definitions

Serial V24:

Level: TTL : High = 1 = 2,4 ... 5V, Low = 0 = 0 ... 0,7V
Modem V28 OFF = 1 = -15 ... -3V, ON = 0 = +3 ... +15V

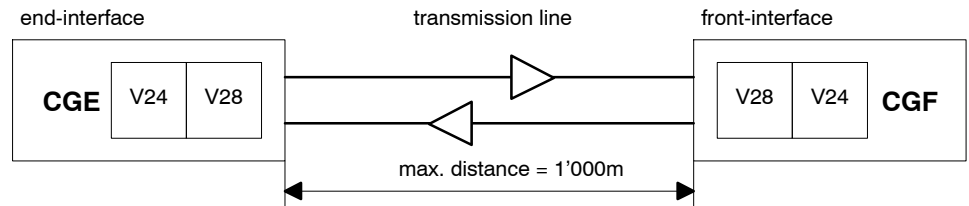
Format: start-bit = 0, data bits (least significant bit first), parity bit, start-bit = 1

Serial NRZI:

Level: TTL : High = 1 = 2,4 ... 5V, Low = 0 = 0 ... 0,7V

2.4.4 Electrical specifications for V24/28-type modems

Connection:	point-to-point, 4-wire telephone cable
Transmission Mode:	bit serial, full duplex
Transmission Rate:	300 ... 9600 Baud dependent on max. line length and equipment application
Characteristics:	log0 = +3V ... +12V log1 = -3V ... -12V



CGE = CERBERUS-Geräte Endschnittstelle (end-interface)
CGF = CERBERUS Geräte Frontschnittstelle (front-interface)

2.4.5 Connecting FSK/PSK-type modems

Connection:	point-to-point, 2-wire telephone cable
Transmission Mode:	bit serial, full duplex
Transmission Rate:	300 ... 2400 Baud dependent on max. line length and equipment application
Line impedance:	600 Ω
Output power:	-6 dBm (K1D020/K1D040/K1D090) -9 dBm (K1D021/K1D140)

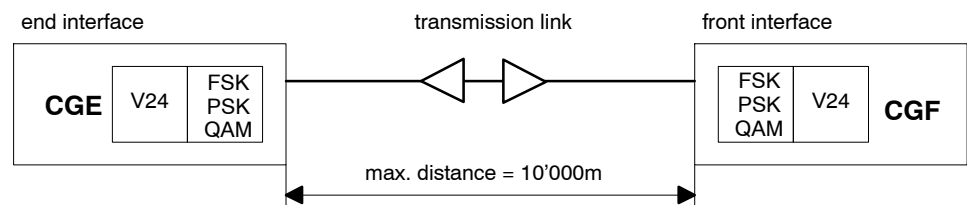
FSK Modems using Bell 103 (K1D020/K1D040/K1D090)			
end interface CGE		front interface CGF	
1270 Hz	Mark	Mark	2225 Hz
1070 Hz	Space	Space	2025 Hz

FSK Modems using V.21 (K1D021/K1D140)			
end interface CGE		front interface CGF	
980 Hz	Mark	Mark	1650 Hz
1180 Hz	Space	Space	1850 Hz

PSK Modems			
end interface CGE		front interface CGF	
1200 Hz	Mark	Mark	2400 Hz
1200 Hz	Space	Space	2400 Hz

QAM Modems			
end interface CGE		front interface CGF	
1200 Hz	Mark	Mark	2400 Hz
1200 Hz	Space	Space	2400 Hz

Note: the application specific baud rates must be selected on the modem boards themselves



CGE = CERBERUS-Geräte Endschnittstelle (Originate mode)
CGF = CERBERUS Geräte Frontschnittstelle (Answer mode)

3 Communication Applications

The various communication nodes in DMS7000 networks comprise of the following HW-modules:

- Communication Modules (for data processing)
- Modems (for data transmission – standard V24/28 or PSK/QAM modulation)

MK7011 CERLOOP-Node (CS100-designation: CK100-11)

The CERLOOP-Node is employed in a ring shaped network in which all network members are directly connected to a common data-bus (LOOP).

In a CERLOOP-Node telegrams are received from the network and passed on to the connected equipment via the local interface. Telegrams which are not addressed to this equipment will be retransmitted on the LOOP. Telegrams originating in the equipment will be transmitted via local interface onto the LOOP.

The CERLOOP-Node monitors the communication link and signals any fault back to the equipment. If it is no longer able to process the telegrams, relay contacts close to over-bridge the loop node.

On detection of an open circuit in the transmission direction of the LOOP, telegrams will automatically be transmitted in the opposite direction.

MK7012 CERBAN-Node (no longer on sale)

Application and function of the CERBAN-Node is similar to that of the CERLOOP-Node. The basic difference is that the local interface in the MK7011 is replaced by a CERBAN front interface in the MK7012. This permits the node to be installed at a considerable distance from the connected equipment.

A network configuration using both CERBAN and CERLOOP-Nodes (END-LOOP) can provide a higher telegram throughput than a pure CERBAN-Network.

MK7022 Communication unit (no longer on sale, CS100 designation: CK100–22)

The MK7022 Communication unit is used as a serial interface between a CERBERUS network (CERBAN or CERLOOP) and a host. It controls the telegram traffic from and towards the host, supervises the communication and re-establish the communication path automatically after a disconnection.

3.1 DMS7000 Equipment

equipment	function	comm.- module 2)	control unit			DMS7000 1)				foreign system	
			CZ10	CZ12	CS4	MM700 0	MC7000	MF7000	MD7000 (CD100-02)	Host	LMS
MK7011	CERLOOP-Node	K1H022 (K1H 021)	X	X	X	(X)	(X)	(X)	X	X	X
		E1H 121 3)	O	O	O	(X)	(X)	(X)	X	O	O
		E1H 130 3)	O	O	O	X	X	X	O	O	O
MK7012	CERBAN-Node	K1H 060 3)	O	O	O	O	O	O	X	O	O
MK7022	Host Adapter	K1H 021 3)	X	X	X	X	O	X	O	X	X

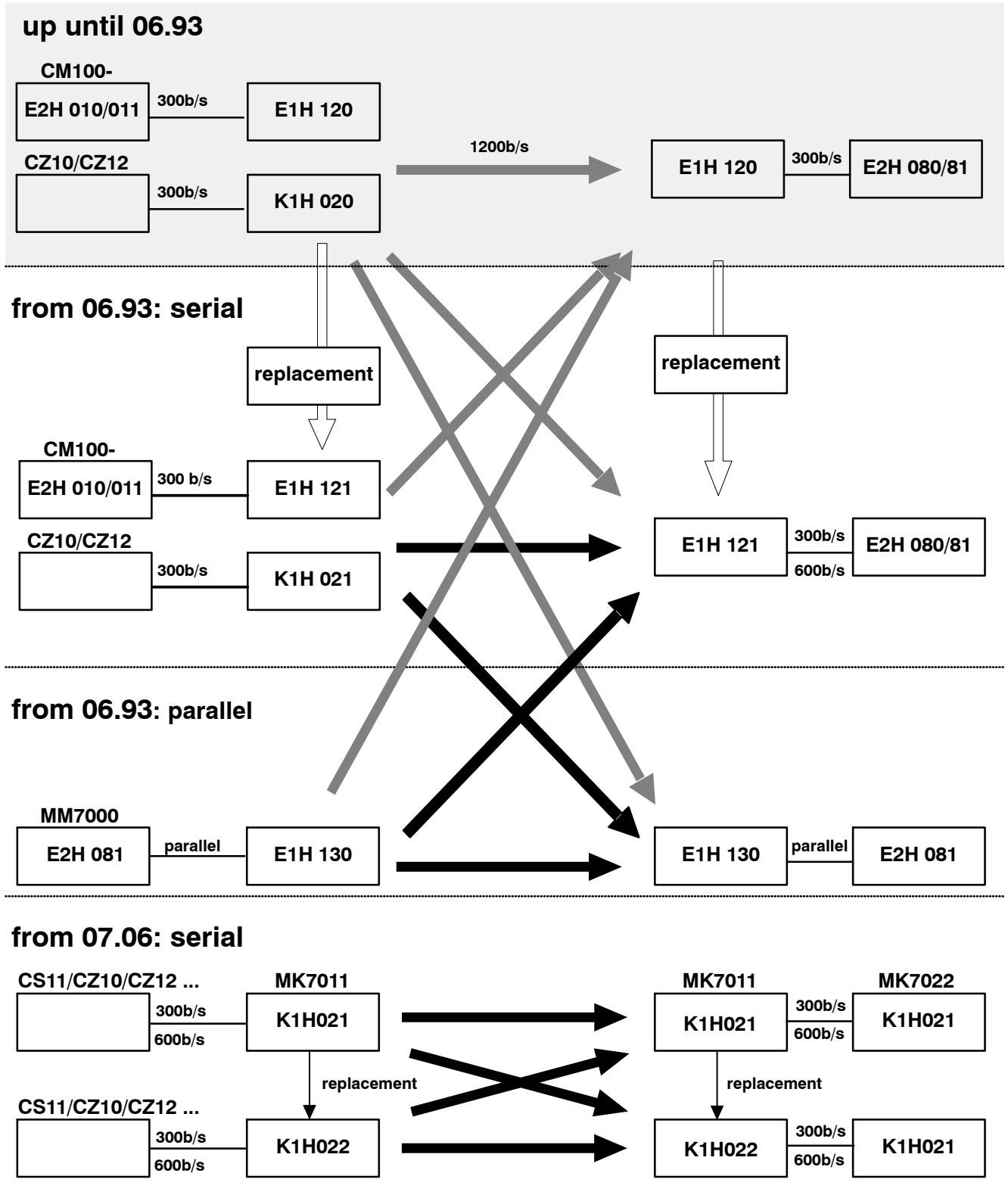
- 1) (X) combination possible although not used
- 2) HW-modules in parentheses have been superseded
- 3) no longer on sale

3.2 CS100 Equipment (superseded by DMS7000)

equipment	function	comm.- module 2)	control unit				CS100				foreign system	
			CZ10	CZ12		CM100-0 1	CT100-01 CT100-11	CF100-02 CB100-0 2	CD100-0 2	Host	LMS	
CK100-11	CERLOOP-Node	K1H 021 (K1H 020)	X	X		X	X	X	X	X	X	
CK100-22	Host Adapter	K1H 021 (K1H 020)	X	X		X	X	X	X	X	X	

- 2) HW-modules in parentheses have been superseded

3.3 Loop Node Replacements



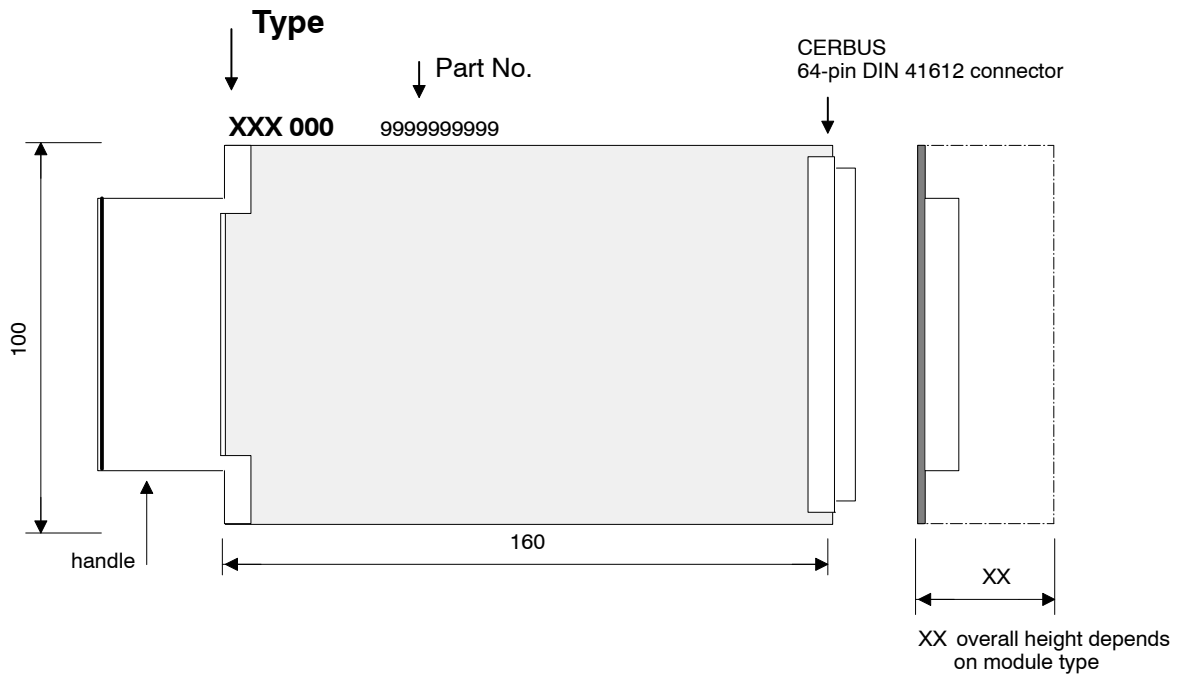
Permissible Combinations and Baud Rates



4 HW-Modules

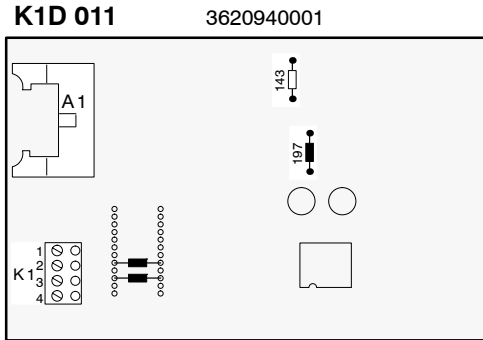
- Each module is documented once only (even if used in several applications). Application specific features and adjustments are indicated on the corresponding pages.

European Format



4.1 Modems

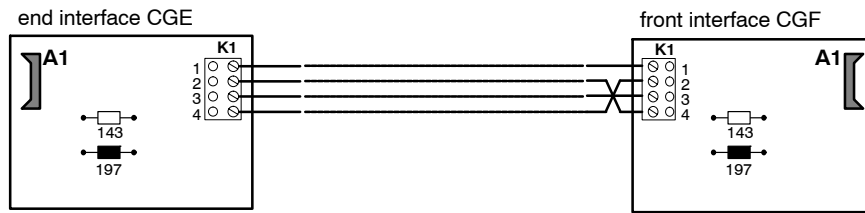
4.1.1 V28-Modem K1D 011 (no longer on sale)



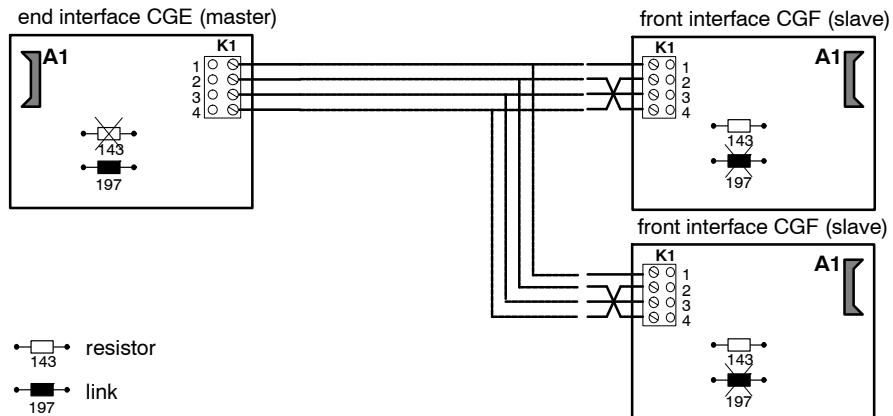
Pos.	Function		Note		
HEADER A1	local serial interface				
terminal K1	1	GND receive	serial interface to network	end-interface CGE	front-Interface CGF
	2	RX receive			
	3	GND transmit			
	4	TX transmit			
Pos.	Programming				
	point-to-point connection	multi-point connection (CERTER)			
		CGE end interface (master)	CGF front interface (slave)		
resistor 143	56K6		56K6		
link 197					

Interconnection Diagrams using K1D 011

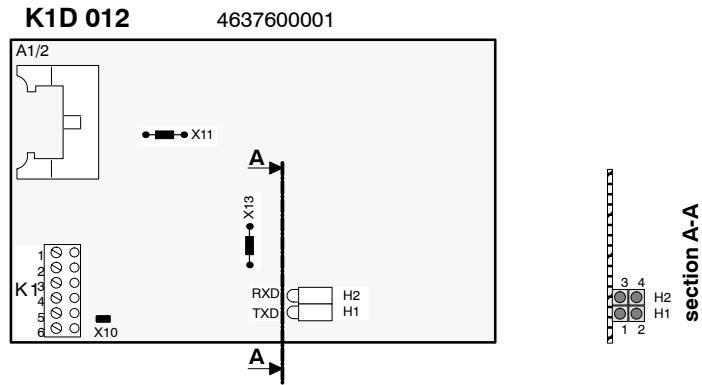
point-to-point connection

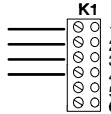
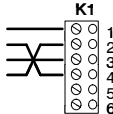
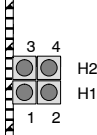






multi-point connection



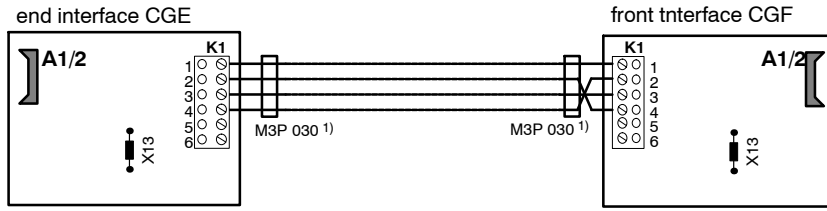
4.1.2 V28-Modem K1D 012 (replacement for K1D 011)



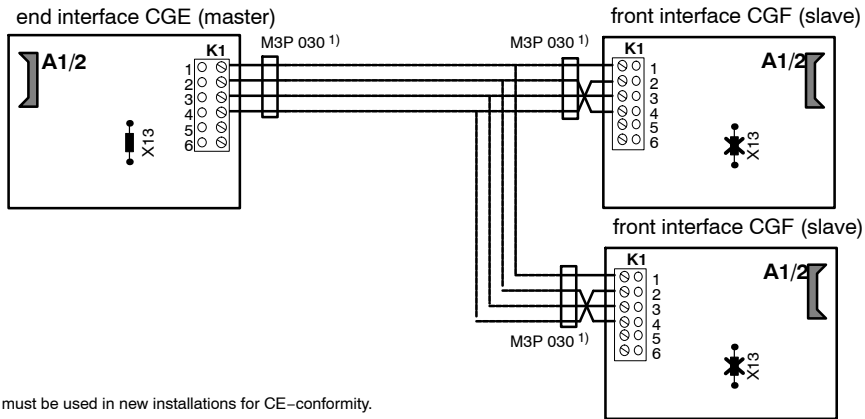
Pos.	Function		Note		
HEADER A1/2	local serial interface				
terminal K1	1	GND receive	serial interface to network	end-interface CGE 	
	2	RX receive			
	3	GND transmit			
	4	TX transmit			
	5	0V	option: external power supply		front-interface CGF 
	6	+5V	(see programming below !)		
connector X10	connection to chassis ground in extreme EM-environments (lightening, HF-fields, etc)		not required with Modem-Filter M3P 030		
green LED H1	1	TX-signal transmit data	ON: power ON		
	2		flashing: data transmission in progress		
yellow LED H2	3	RX-signal receive data	ON: corresponding modem line (TX) connected		
	4		flashing: data reception in progress		
Pos.	Network Programming				
links	point-to-point connection (CERBAN)	multi-point connection (CERTER)			
		CGE end-interface (master)	CGF front-interface (slave)		
X13					
Programming in applications requiring external power supply via terminals K1[5/6] (exception)					
X11					

Interconnection Diagrams using K1D 012

point-to-point connection

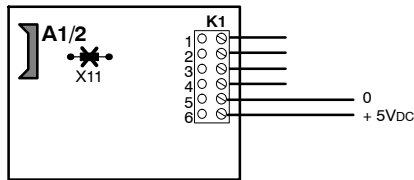


multi-point connection

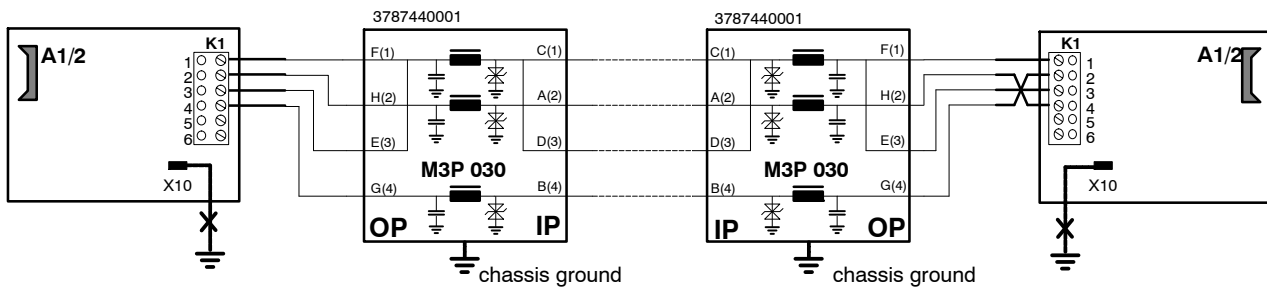


1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

external power supply +5VDC +/-5%



Applications requiring Modem Filter M3P 030

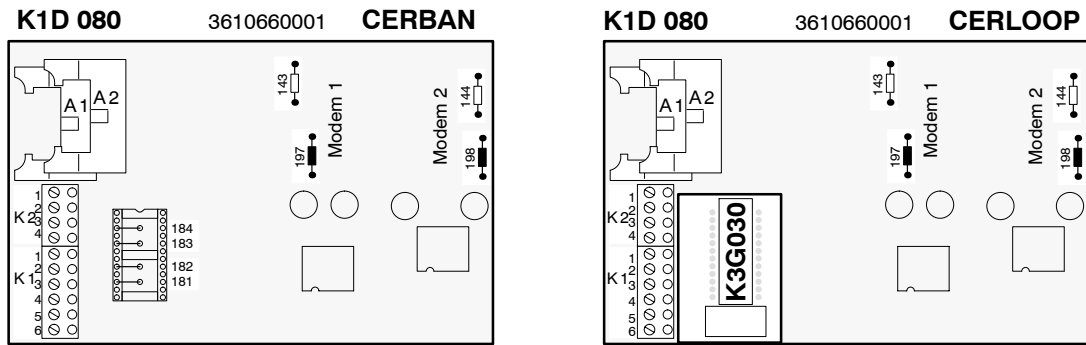


IP Connected with line
OP Connected with modem

1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

Note: X10 MUST NOT be connected to chassis ground when Modem Filter is used !!

4.1.3 Dual V28-Modem K1D 080 (no longer on sale)

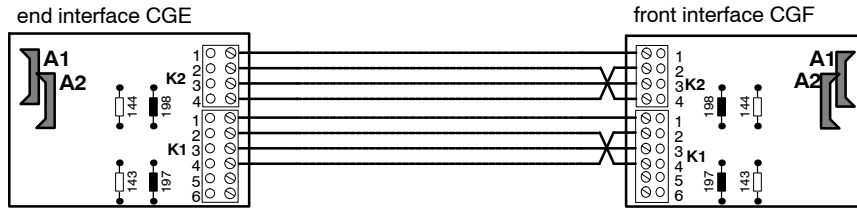


Modem 1		Modem 2		Function		Note		
HEADER A1		HEADER A2		local serial interface				
terminal	1	terminal	1	GND receive	serial interface to network	end interface CGE	front-interface CGF	CERLOOP
K1	2	K2	2	TX receive				
	3		3	GND transmit				
	4		4	RX transmit				
	5			0V	option: external power supply			
6		+5V						

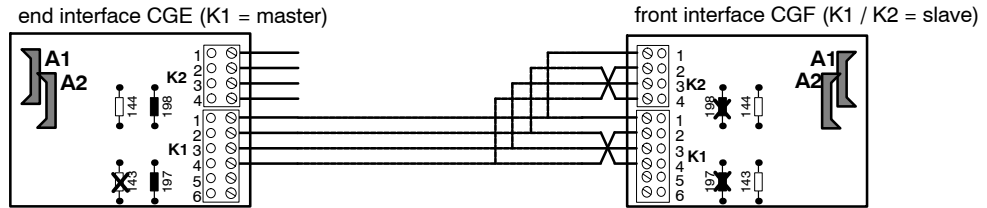
Modem 1	Modem 2	Programming			
		CERLOOP		CERBAN	
		insert Relay Card K3G 030 part no. 4284330001	point-to-point connection	multi-point connection	
				end-interface CGE	front-interface CGF
resistor 143	resistor 144	56K6	56K6		56K6
link 197	link 198				
181, 182	183, 184				

Interconnection Diagrams using K1D 080

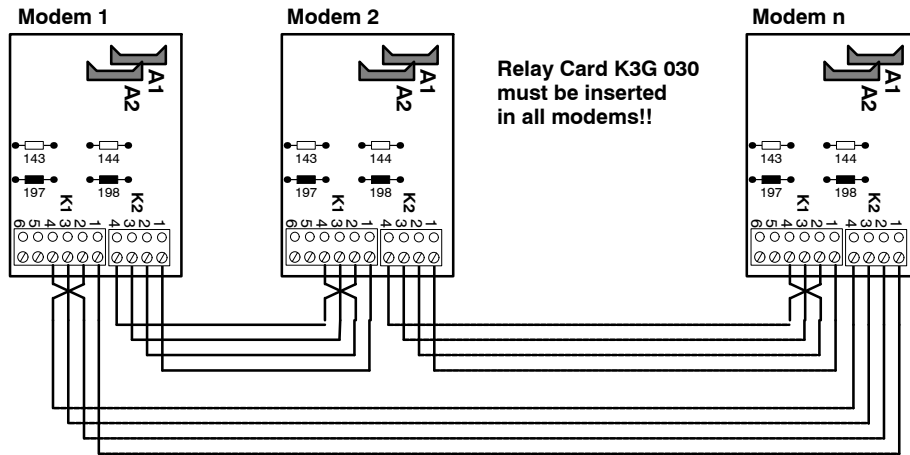
point-to-point connection



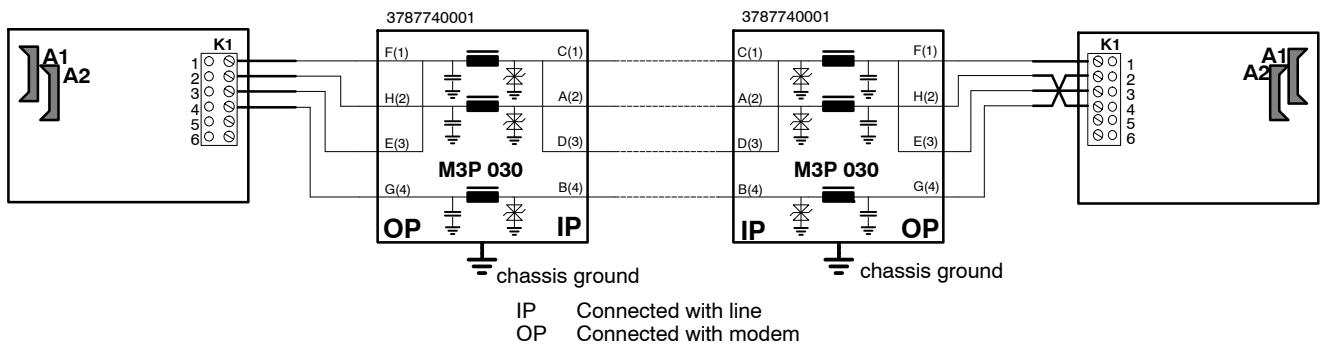
multi-point connection



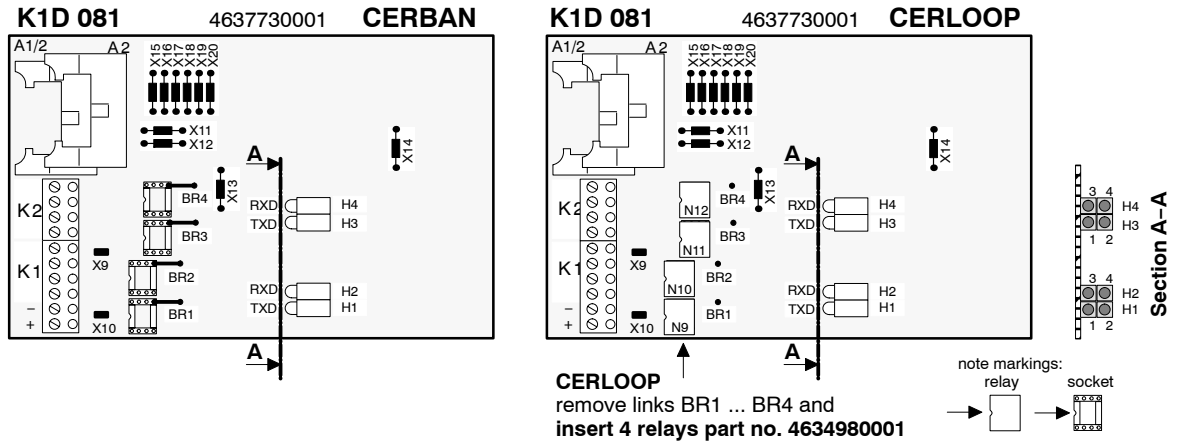
CERLOOP connection



Applications requiring Modem Filter M3P 030



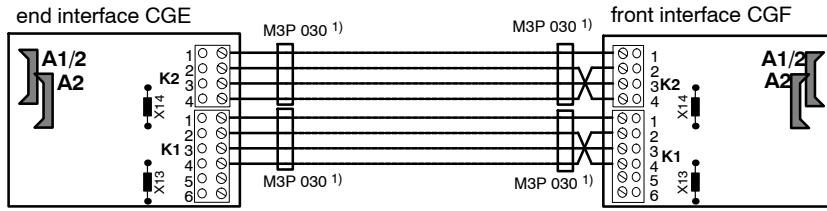
4.1.4 Dual V28-Modem K1D 081 (replacement for K1D 080)



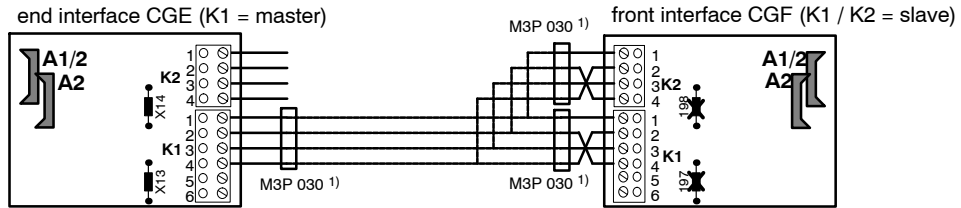
Modem 1	Modem 2	Function	Note																
HEADER A1/2		local serial interface																	
HEADER A2		local serial interface																	
terminal K1	terminal K2	<table border="1"> <tr> <td>1</td> <td>GND receive</td> <td rowspan="4">serial interface to network</td> <td rowspan="4">end interface front-interface CGE CGF</td> </tr> <tr> <td>2</td> <td>RX receive</td> </tr> <tr> <td>3</td> <td>GND transmit</td> </tr> <tr> <td>4</td> <td>TX transmit</td> </tr> <tr> <td>5</td> <td>0V</td> <td rowspan="2">external power supply (exception) see programming !</td> <td rowspan="2"> </td> </tr> <tr> <td>6</td> <td>+5V</td> </tr> </table>	1	GND receive	serial interface to network	end interface front-interface CGE CGF	2	RX receive	3	GND transmit	4	TX transmit	5	0V	external power supply (exception) see programming !		6	+5V	
1	GND receive	serial interface to network	end interface front-interface CGE CGF																
2	RX receive																		
3	GND transmit																		
4	TX transmit																		
5	0V	external power supply (exception) see programming !																	
6	+5V																		
connector X10	connector X9	option: ground connection for applications in extreme EM-environments (lightening, HF-fields, etc)	not required with external Modem-Filter M3P 030																
green LED H1	green LED H3	<table border="1"> <tr> <td>1</td> <td rowspan="2">TX-signal transmit data</td> <td>ON: power ON CERLOOP: bypass-relay energised</td> <td rowspan="2"> </td> </tr> <tr> <td>2</td> <td>flashing: progress data transmission in</td> </tr> <tr> <td>3</td> <td rowspan="2">RX-signal receive data</td> <td>ON: modem line (TX) connected CERLOOP: bypass-relay energised</td> <td rowspan="2"> </td> </tr> <tr> <td>4</td> <td>flashing: progress data reception in</td> </tr> </table>	1	TX-signal transmit data	ON: power ON CERLOOP: bypass-relay energised		2	flashing: progress data transmission in	3	RX-signal receive data	ON: modem line (TX) connected CERLOOP: bypass-relay energised		4	flashing: progress data reception in					
1	TX-signal transmit data	ON: power ON CERLOOP: bypass-relay energised																	
2		flashing: progress data transmission in																	
3	RX-signal receive data	ON: modem line (TX) connected CERLOOP: bypass-relay energised																	
4		flashing: progress data reception in																	
yellow LED H2	yellow LED H4																		
Modem 1	Modem 2	Network Programming																	
		CERLOOP	CERBAN																
links X13	links X14	insert relays part no. 4634980001	<table border="1"> <tr> <td>point-to-point connection</td> <td colspan="2">multi-point connection (CERTER)</td> </tr> <tr> <td></td> <td>CGE end-interface</td> <td>CGF front-interface</td> </tr> </table>	point-to-point connection	multi-point connection (CERTER)			CGE end-interface	CGF front-interface										
point-to-point connection	multi-point connection (CERTER)																		
	CGE end-interface	CGF front-interface																	
BR1, BR2	BR3, BR4																		
Modem 1	Modem 2	Programming for external power supply via terminals K1[5/6] (exception)																	
X11	---		Modem 1 supplied by external +5VDC																
X11	X12, X17, X18		Modem 1 and Modem 2 supplied by external +5VDC Note: no potential isolation between Modem 1 and Modem 2 at the TTL-level																
---	X19, X20																		
Modem 1	Modem 2	Application where K1D 080 is being replaced by K1D 081 (repair)																	
X15, X16	X17, X18		use ribbon cable F14A																

Inerconnection Diagrams using K1D 081

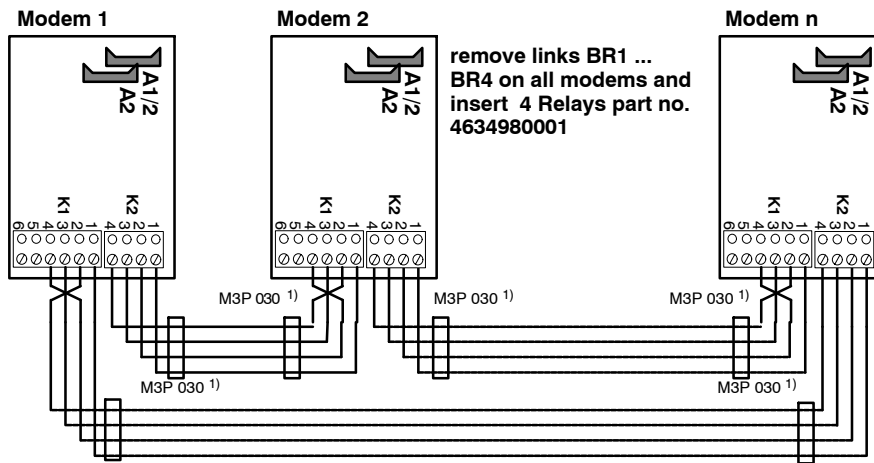
point-to-point connection



multi-point connection

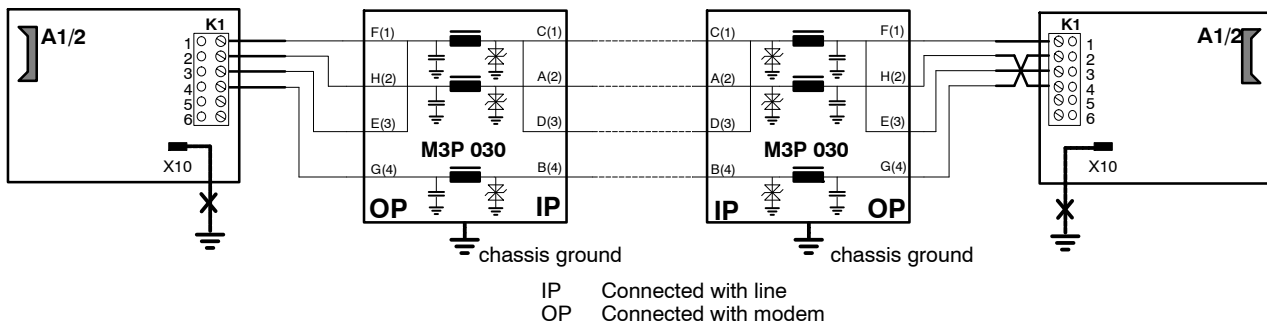


CERLOOP



1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

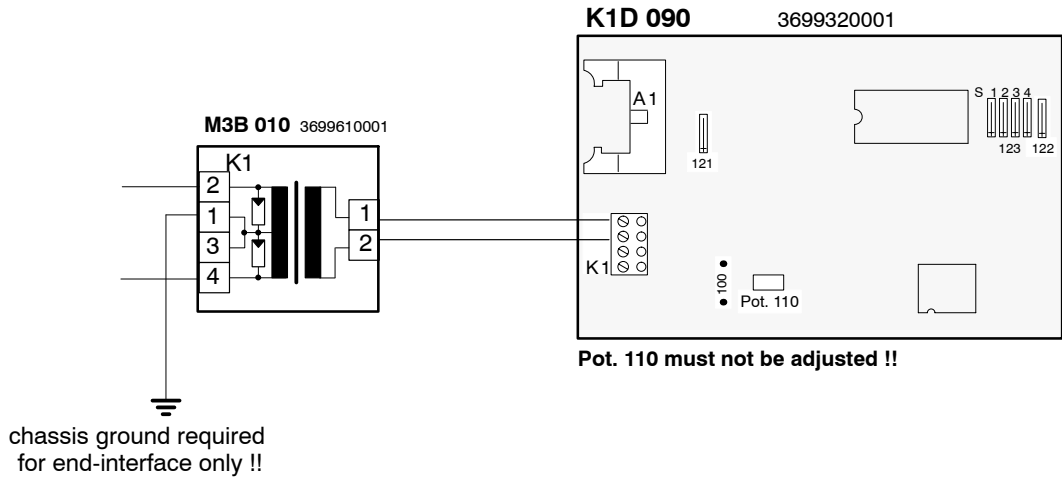
Applications requiring Modem Filter M3P 030



1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

Note: X10 MUST NOT be connected to chassis ground when Modem Filter is used !!

4.1.5 FSK-Modem K1D 090 (no longer on sale)



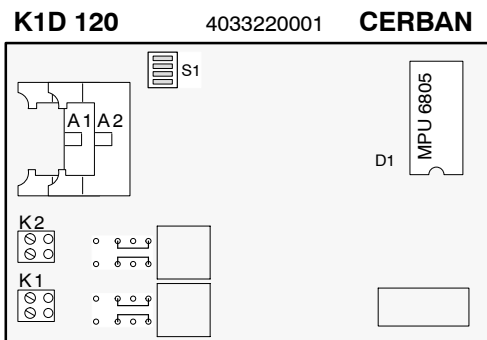
M3B 010 included in part no. Nr. 3699320001 ! (requires space equivalent to 4 terminals)

Pos.	Function		Note
HEADER A1	local serial interface		
terminal K1	1	transmit and receive	serial interface to network
	2		
	3	+5VDC	not used
	4	watchdog (4,8s)	

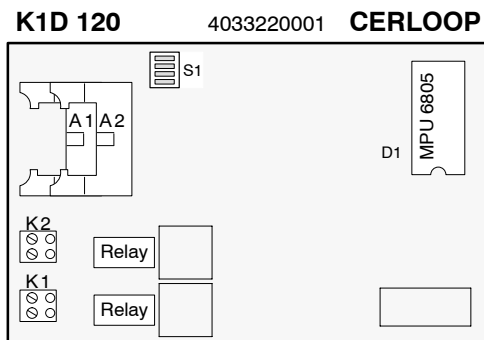
connection only permitted via Filter M3B 010 !!

Pos.	Programming	
DIP-FIX	CGE end-interface	CGF front-interface
121		
122		
123	S1 ... S4 factory setting: all closed (Bell 103, 300 Baud, full duplex)	

4.1.6 Dual FSK/PSK-Modem K1D 120 (no longer on sale)



remove relays and
insert links part no. 4520720001 !



2 Relays part no. 4284590001 fitted at factory !

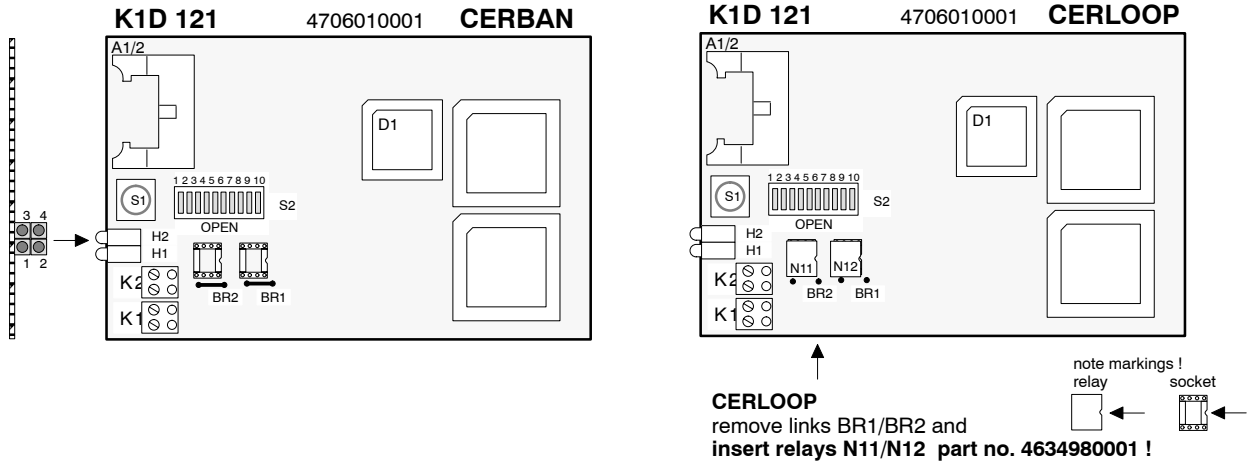
Modem 1		Modem 2		Function		Note
HEADER A1		HEADER A2		local serial interface		
terminal K1	1	terminal K2	1	transmit / receive	serial interface to network	
	2		2			

Modem 1	Modem 2	Programming					
		CERLOOP		CERBAN			
		K1 (answer)	K2 (originate)	CGE end interface		CGF front interface	
baud rate -->		1200 Bd/PSK	1200 Bd/PSK	300 Bd/FSK	1200 Bd/PSK	300 Bd/FSK	1200 Bd/PSK
DIL-switch S1	1	DIL-switch S1	3	OFF	OFF	ON	OFF
	2		4	ON	OFF	OFF	ON
D1		equipment program fitted at factory BK2000 .____					

Note:

- 1) switch positions are only interrogated when power is applied (via A1, A2) !
- 2) cannot be used together with modems:- K1D 020, K1D 030, K1D 040

4.1.7 Dual FSK/PSK-Modem K1D 121 (replacement for K1D120)



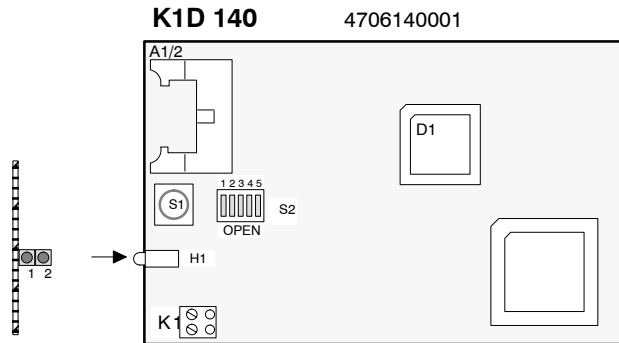
Modem 1	Modem 2	Function
HEADER A1/2		local serial interface
terminal K1	terminal K2	transmit / receive
yellow LED H1	yellow LED H2	RX receive
green LED H1	green LED H2	TX transmit
push-button S1		reset: press push-button after modifying DIL-switch S2

Modem 1	Modem 2	Programming					
		CERLOOP insert 2 relays N11/N12 part no. 4634980001 !		CERBAN			
				CGE end interface		CGF front interface	
baud rate --->		1200 Bd/PSK	2400 Bd/AM	300 Bd/FSK	600 Bd/PSK	300 Bd/FSK	600 Bd/PSK
DIL-switch	DIL-switch	ON	ON	OFF	OFF	OFF	OFF
S2	1	6	7	OFF	ON	OFF	ON
	2	8	9	ON (originate)		OFF (answer)	
	3	K1: S2-3 OFF (answer) K2: S2-8 ON (originate)		OFF (8 data bits /no parity or 7 data bits with parity)			
	4	10	ON (8 data bits / even parity)		ON (2 stop bits)		
link BR1	link BR2	•X•		•□• links fitted at factory (part no. 2763840001)			
D1		equipment program fitted at factory BK7000. ___					

BACOM licence! (FE 63.288B Telecom, PTT) (BACOM=Bundesamt für Kommunikation)

4.1.8 FSK/PSK-Modem K1D 140 (replacement for K1D 090)

**only communicating modem pairs may be replaced !
M3B010 may no longer be used**



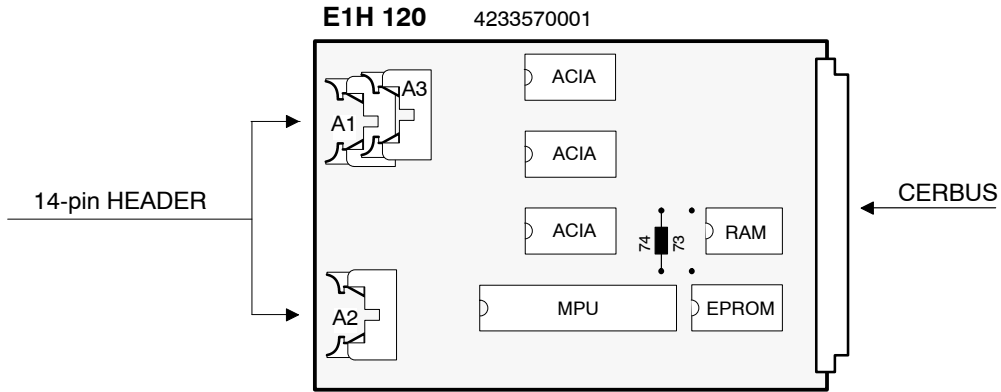
Pos.		Function	
HEADER A1/2		local serial interface	
terminal K1	1	transmit / receive	serial interface to network
	2		
yellow LED H1	1	RX receive	flashing data reception in progress
green LED H1	2	TX transmit	flashing data transmission in progress
push-button S1		Reset: press button after modifying DIL-switch S2	

Pos.	Programming			
	CGE end interface		CGF front interface	
baud rate ->	300 Bd/FSK		600 Bd/PSK	
DIL-switch S2	1	OFF	OFF	OFF
	2	OFF	ON	ON
S2	3	ON (originate)		OFF (answer)
	4	OFF (8 data bits / no parity or 7 data bits with parity)		
	5	ON (2 stop bits)		
D1	equipment program fitted at factory BK7000. ____			

BACOM licence! (FE 63.288B Telecom, PTT) (BACOM=Bundesamt für Kommunikation)

4.2 Communication Modules

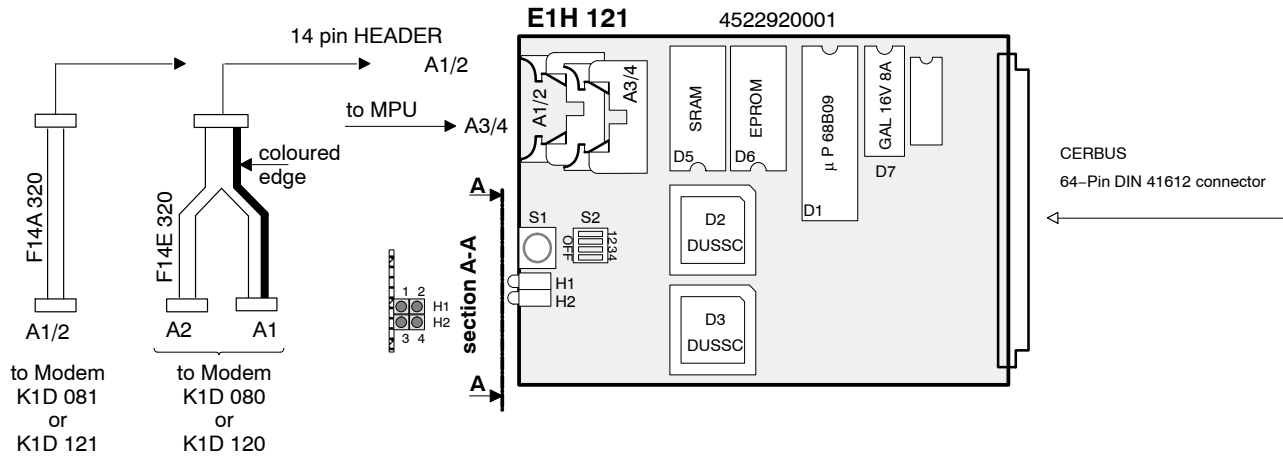
4.2.1 Communication Module E1H 120 to CK100-11 (no longer on sale)



Application	CK100-11 CERLOOP-Node	Note
Pos.	Function	
A1	network: CERLOOP loop node	
A2		
A3	local interface	data transfer
Pos.	Programming	Note
EPROM	file name: CK1002.____ EPROM 8k x 8Bit	memory
RAM	8k x 8Bit	factory fitted
links 73		factory settings
74		

1) configuration using SWE100D2 (or CDEDT Flex)

4.2.2 Communication Module E1H 121 to MK7011 (no longer on sale)

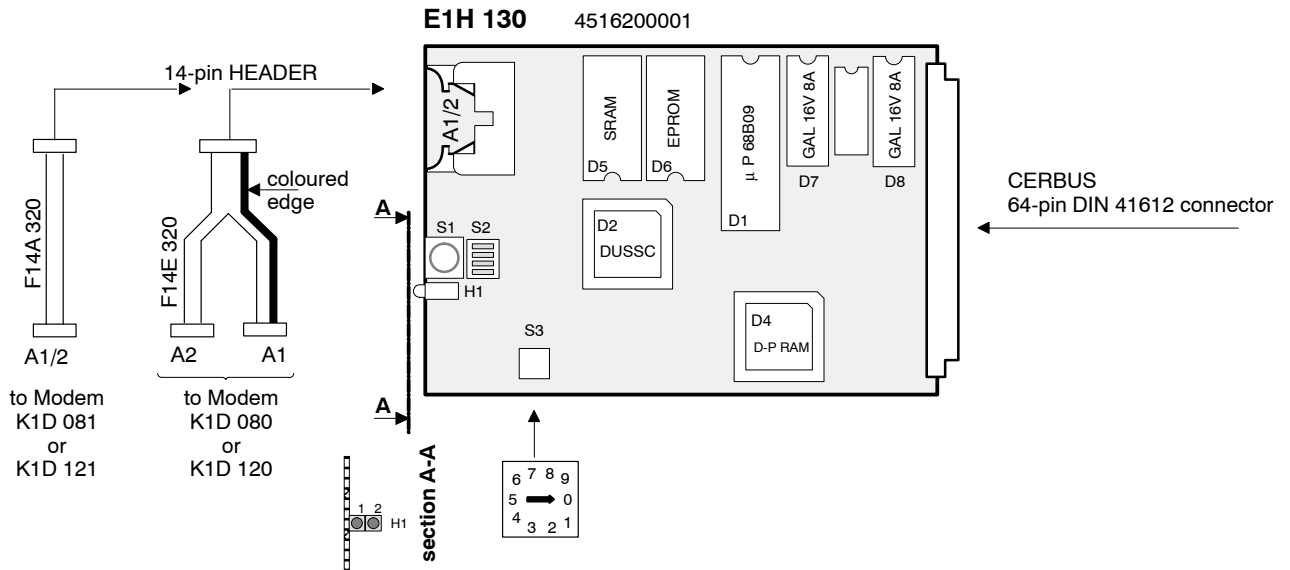


Application	MK7011 CERLOOP Node		Note
Pos.	Function connector, LED's		
A1/2	CERLOOP		network
A3/4	A3: local interface A4: not used		data transfer
H1	1	fault LOOP K1 [A1]	
	2	fault LOOP K2 [A2]	
H2	3	fault local interface [A3]	
	4	not used	

Application	MK7011 CERLOOP Node				Note
Pos.	Function switches				
Switch S1	Reset				
Switch S2	ON	OFF	Default	Function	
S2 - 1	2400	1200	1200	CERLOOP [A1/2]	
S2 - 2	NO	NO	NO	no function	
S2 - 3	600	300	300	local interface [A3]	
S2 - 4	Test	Normal	Normal	factory test	

Application	MK7011 CERLOOP Node		Note
Pos.	Function RAM, EPROM		
D5	SRAM 32k x 8Bit		working memory
D6	file name: CK7001. __	EPROM 32k x 8Bit	program memory
D7	file name: PK7001. __	GAL16V8A	decoder

4.2.3 Communication Module E1H 130 to MK7011 (no longer on sale)

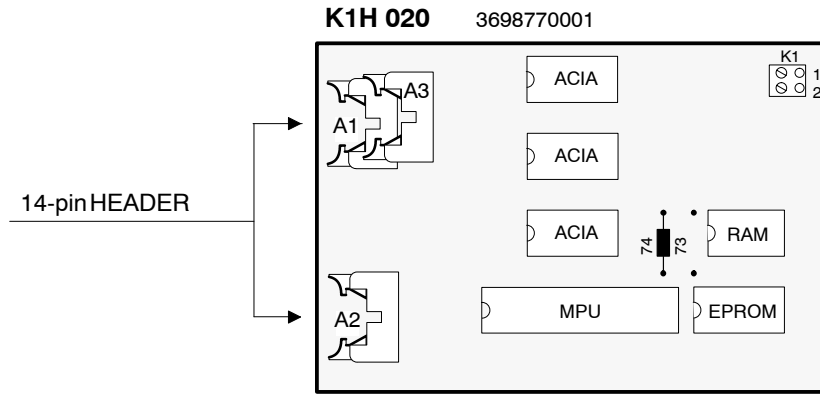


Application	MK7011 CERLOOP Node		Note
Pos.	Function connector, LED's		
A1/2	CERLOOP		network
H1	1	fault LOOP K1 [A1]	
	2	fault LOOP K2 [A2]	

Application	MK7011 CERLOOP Node				Note
Pos.	Funktion switches				
Switch S1	Reset				
Switch S2	ON	OFF	Default	Function	
S2 - 1	2400	1200	1200	CERLOOP [A1/2]	
S2 - 2	NO	NO	NO	no function	
S2 - 3	600	300	300	local interface [A3]	
S2 - 4	Test	Normal	Normal	factory test	
S3	address switch: address 0				

Application	MK7011 CERLOOP Node		Note
Pos.	Function RAM, EPROM		
D5	SRAM 32k x 8Bit		working memory
D6	file name: CK7001 .__	EPROM 32k x 8Bit	program memory
D7	file name: PK7001 .__	GAL16V8A	decoder
D8	file name: PK7002 .__	GAL16V8A	decoder

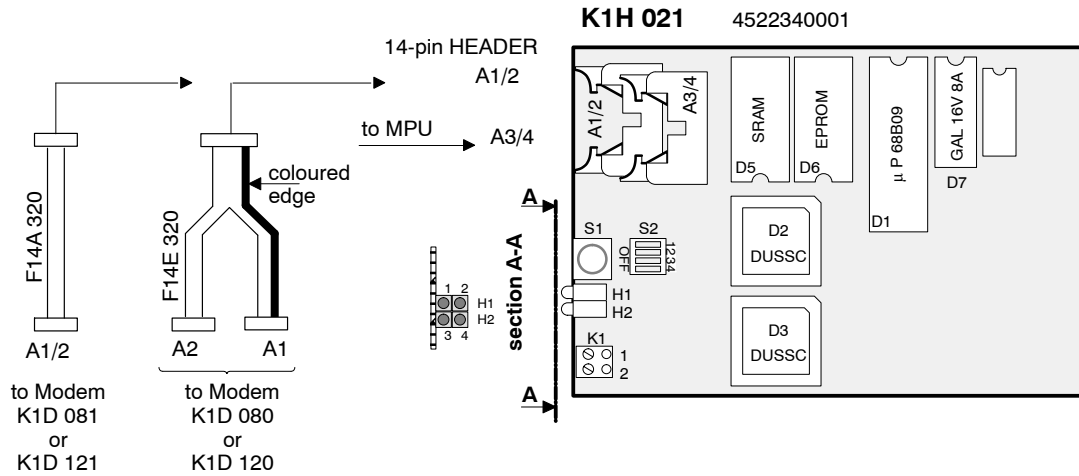
4.2.4 Communication Module K1H 020 to CK100-11 (no longer on sale)



Application	CK100-11 CERLOOP-Node	Note	
Pos.	Function connector, terminal		
A1	network: CERLOOP Loop node		
A2			
A3		local interface	data transfer
K1	1	-24Vdc	voltage range 10 ... 30Vdc
	2	GND	

Application	CK100-11 CERLOOP-Node	Note
Pos.	Function RAM, EPROM, links	
EPROM	file name: CK1002.____ EPROM 8k x 8Bit	program memory
RAM	8k x 8Bit	factory fitted
links		factory settings
73		
74		

4.2.5 Communication Module K1H 021 to MK7011 (no longer on sale, replacement module K1H 022)

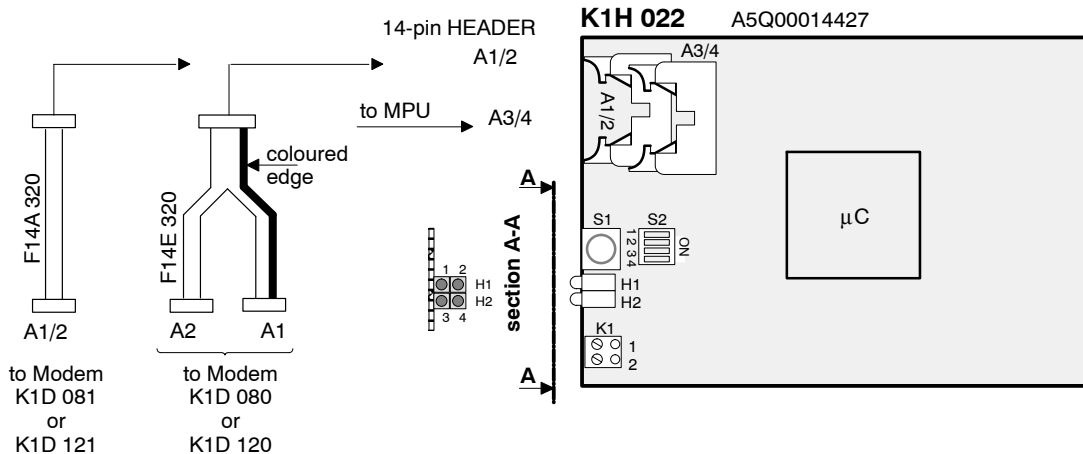


Application	MK7011 CERLOOP Node		Note
Pos.	Function connector, LED's, terminals		
A1/2	CERLOOP		network
A3/4	A3: local interface A4: not used		data transfer
H1	1	fault LOOP K1 [A1]	
	2	fault LOOP K2 [A2]	
H2	3	fault local interface [A3]	
	4	not used	
K1	1	- 24Vdc	voltage range 10 ... 30Vdc
	2	GND	

Application	MK7011 CERLOOP Node				Note
Pos.	Funktion switches				
Switch S1	Reset				
Switch S2	ON	OFF	Default	Function	
S2 - 1	2400	1200	1200	CERLOOP [A1/2]	
S2 - 2	NO	NO	NO	no function	
S2 - 3	600	300	300	local interface [A3]	
S2 - 4	Test	Normal	Normal	factory test	

Application	MK7011 CERLOOP Node		Note
Pos.	Function RAM, EPROM		
D5	SRAM 32k x 8Bit		working memory
D6	file name: CK7001 .__	EPROM 32k x 8Bit	program memory
D7	file name: PK7001 .__	GAL16V8A	decoder

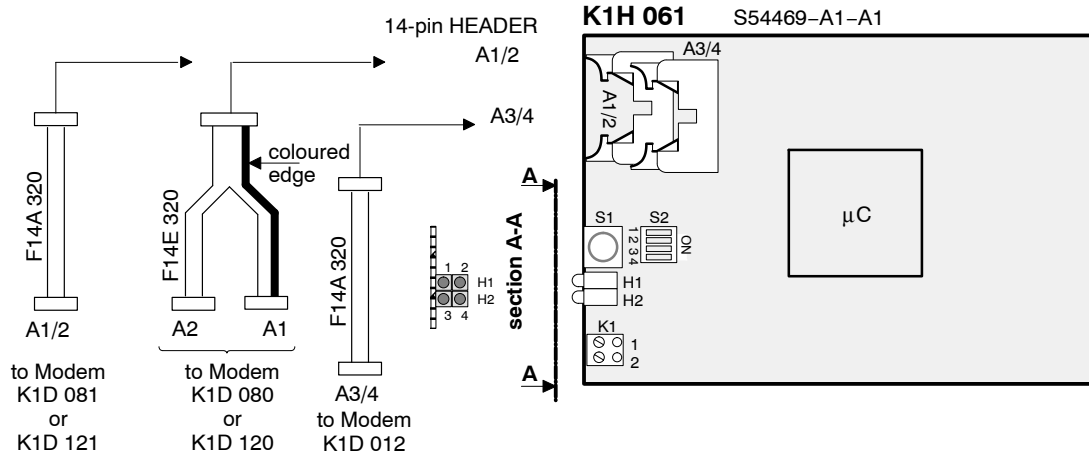
4.2.6 Communication Module K1H 022 to MK7011



Application	MK7011 CERLOOP Node		Note
Pos.	Function connector, LED's, terminals		
A1/2	CERLOOP		network
A3/4	A3: local interface A4: not used		data transfer
H1	1	fault LOOP K1 [A1]	
	2	fault LOOP K2 [A2]	
H2	3	fault local interface [A3]	
	4	not used	
K1	1	- 24Vdc	voltage range 10 ... 30Vdc
	2	GND	

Application	MK7011 CERLOOP Node				Note
Pos.	Funktion switches				
Switch S1	Reset				
Switch S2	ON	OFF	Default	Function	
S2 - 1	2400	1200	1200	CERLOOP [A1/2]	
S2 - 2	NO	NO	NO	no function	
S2 - 3	600	300	300	local interface [A3]	
S2 - 4	Test	Normal	Normal	factory test	

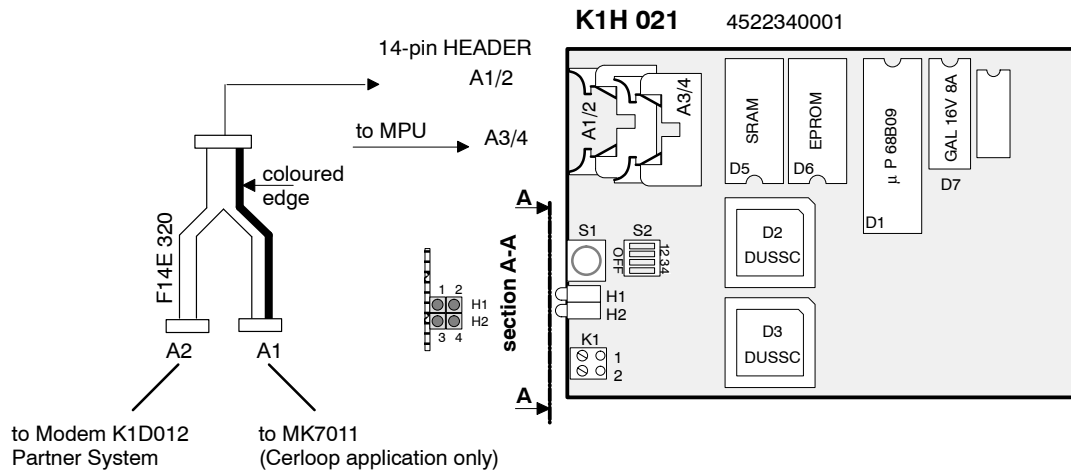
4.2.7 Communication Module K1H 061 to MK7011



Application	MK7011 CERLOOP Node		Note
Pos.	Function connector, LED's, terminals		
A1/2	CERLOOP		network
A3/4	A3: local interface (to FS20 Cerloop GW or TELMON via Modem K1D 012) A4: not used		data transfer
H1	1	fault LOOP K1 [A1]	
	2	fault LOOP K2 [A2]	
H2	3	fault local interface [A3]	
	4	not used	
K1	1	- 24Vdc	voltage range 10 ... 30Vdc
	2	GND	

Application	MK7011 CERLOOP Node				Note
Pos.	Funktion switches				
Switch S1	Reset				
Switch S2	ON	OFF	Default	Function	
S2 - 1	2400	1200	1200	CERLOOP [A1/2]	
S2 - 2	NO	NO	NO	no function	
S2 - 3	600	300	300	local interface [A3]	
S2 - 4	Test	Normal	Normal	factory test	

4.2.8 Communication Module K1H 021 to MK7022 (no longer for sale)



Application	MK7022 communication unit CERLOOP	MK7022 communication unit CERBAN	Note
Pos.	Function connector, LED's, terminals	Function connector, LED's, terminals	
A1/2	A1: local interface A2: ISO-1745 interface	A1: front interface CGF via modem (for distances > 50 cm) A2: ISO-1745 interface	data transfer Partner System
A3/4	A3: not used A4: not used	A3: front interface CGF via local serial interface (for distances < 50 cm) A4: not used	data transfer
H1	1 fault DMS7000 [A1] 2 fault host [A2]	1 fault DMS7000 [A1] 2 fault host [A2]	
H2	3 no function 4 no function	3 no function 4 no function	
K1	1 - 24Vdc 2 GND	1 - 24Vdc 2 GND	voltage range 10 ... 30Vdc

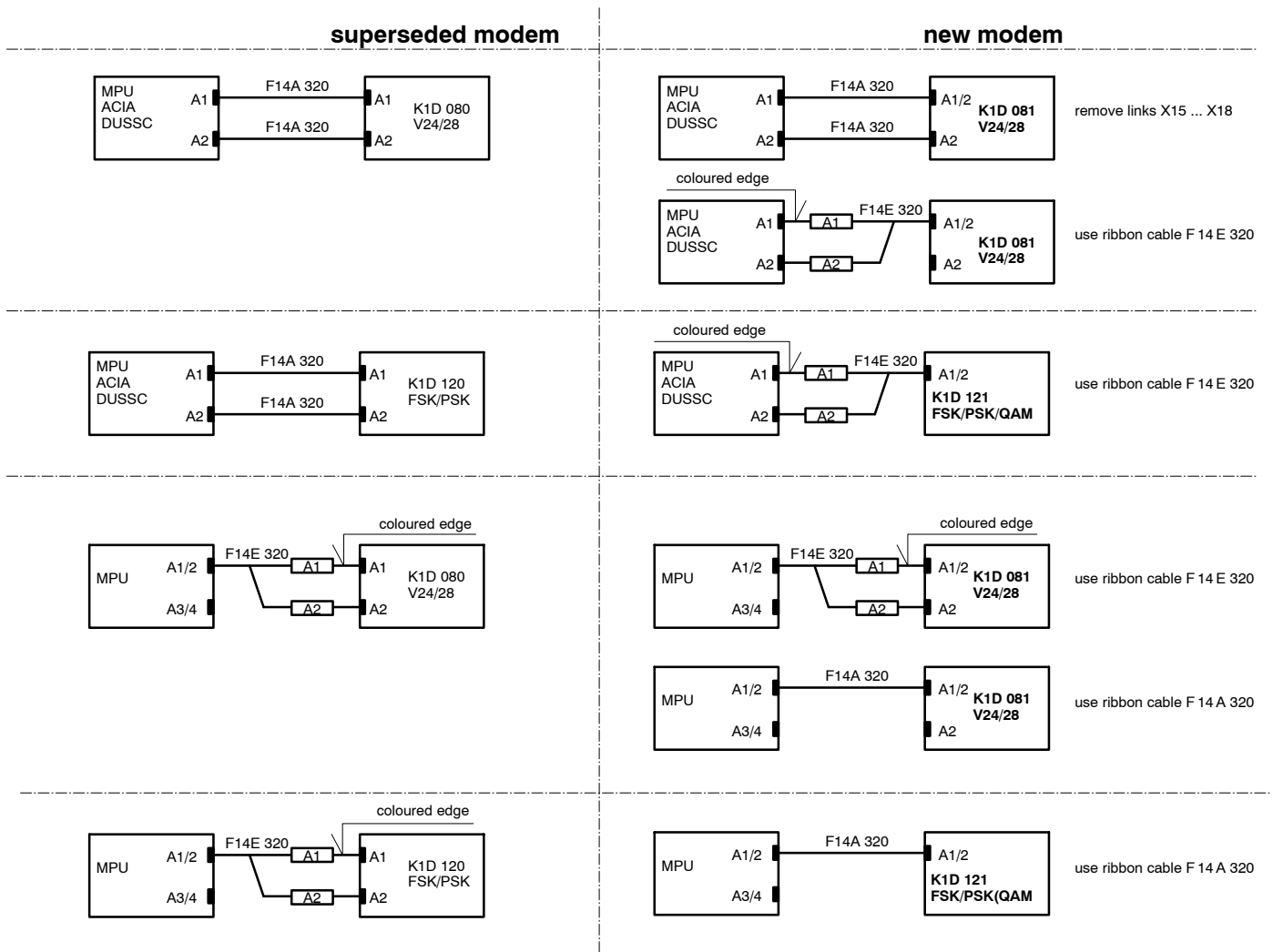
Application	MK7022 communication unit CERLOOP	MK7022 communication unit CERBAN	Note
Pos.	Function switches	Function switches	
Switch S1	Reset	Reset	
Switch S2	ON OFF Default Function	ON OFF Default Function	
S2 - 1	600 300 300 Baudrate local interface	600 300 300 Baudrate local interface	
S2 - 2	2400 1200 NO Baudrate ISO-1745	2400 1200 1200 Baudrate ISO-1745	
S2 - 3	NO NO NO no function	1) 2) CERBAN Port	
S2 - 4	NO NO NO no function	NO NO NO no function	
		1) connected via modem 2) connected via local serial interface	

Application	MK7022 communication unit CERLOOP	MK7022 communication unit CERBAN	Note
Pos.	Function RAM, EPROM	Function RAM, EPROM	
D5	SRAM 32k x 8Bit	SRAM 32k x 8Bit	working memory
D6	file name: HK7xxx. __ EPROM 32k x 8Bit xxx = local address MK7022	file name: HK7001.xxx EPROM 32k x 8Bit xxx = local address MK7022	program memory
D7	file name: PK7001. __ GAL16V8A	file name: PK7001. __ GAL16V8A	decoder

5 Block Diagrams

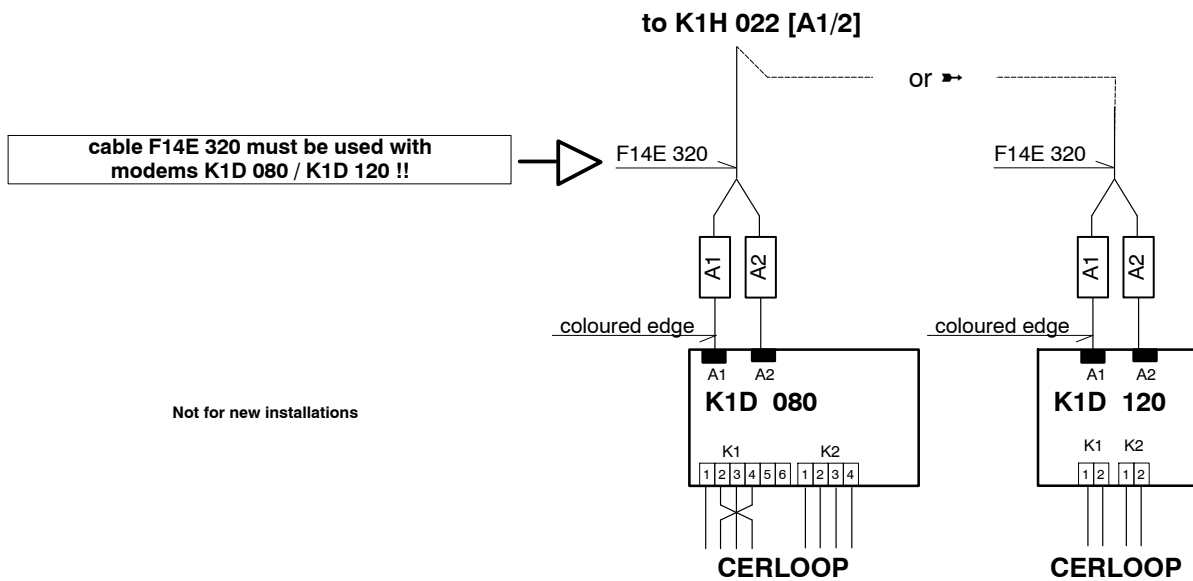
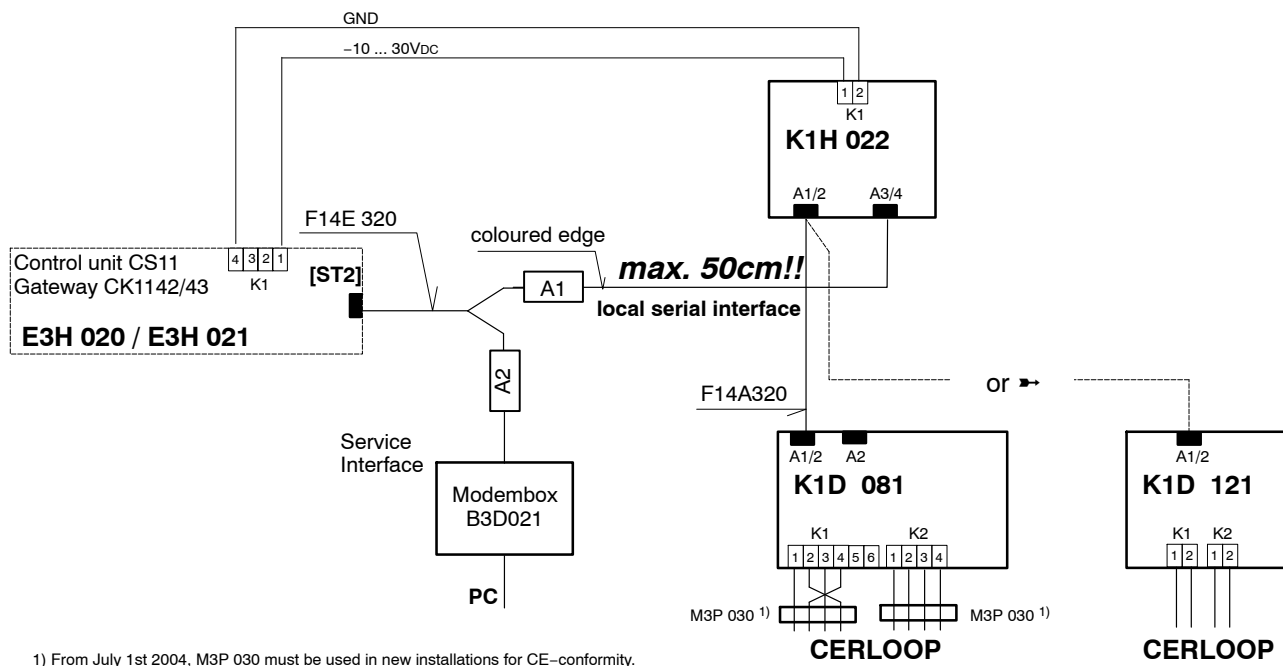
5.1 Modem Installation with Ribbon Cable F14A ... or F14E ...

The serial interface HEADER pin-outs of the various modules (MPU, ACIA, DUSSC etc.) are not 100% intercompatible. The following diagram provides guidance for selection of the appropriate cable for the required connection.

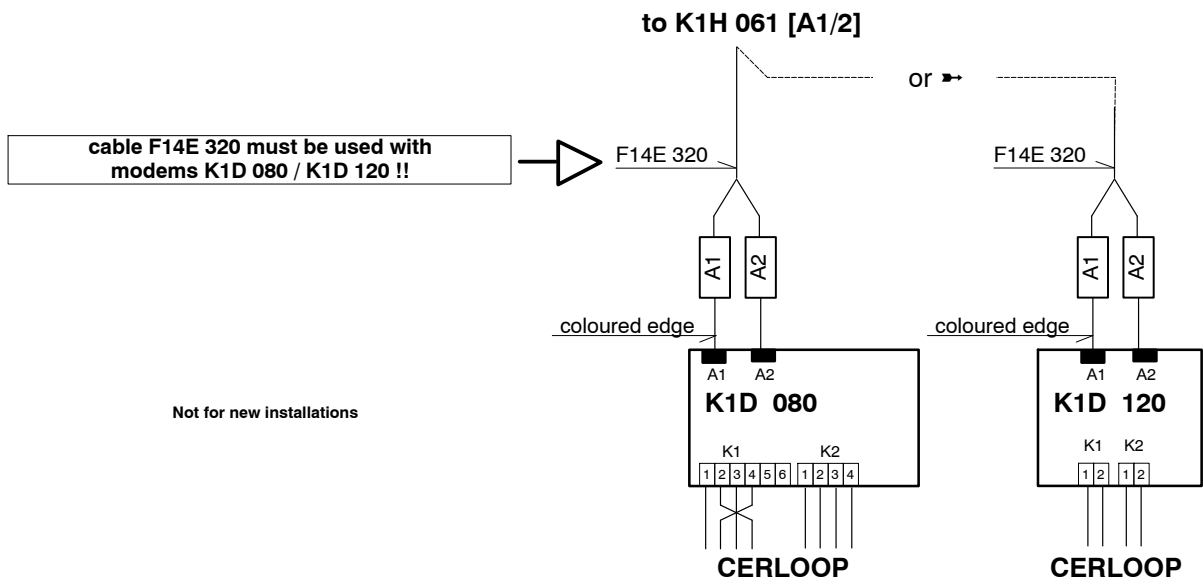
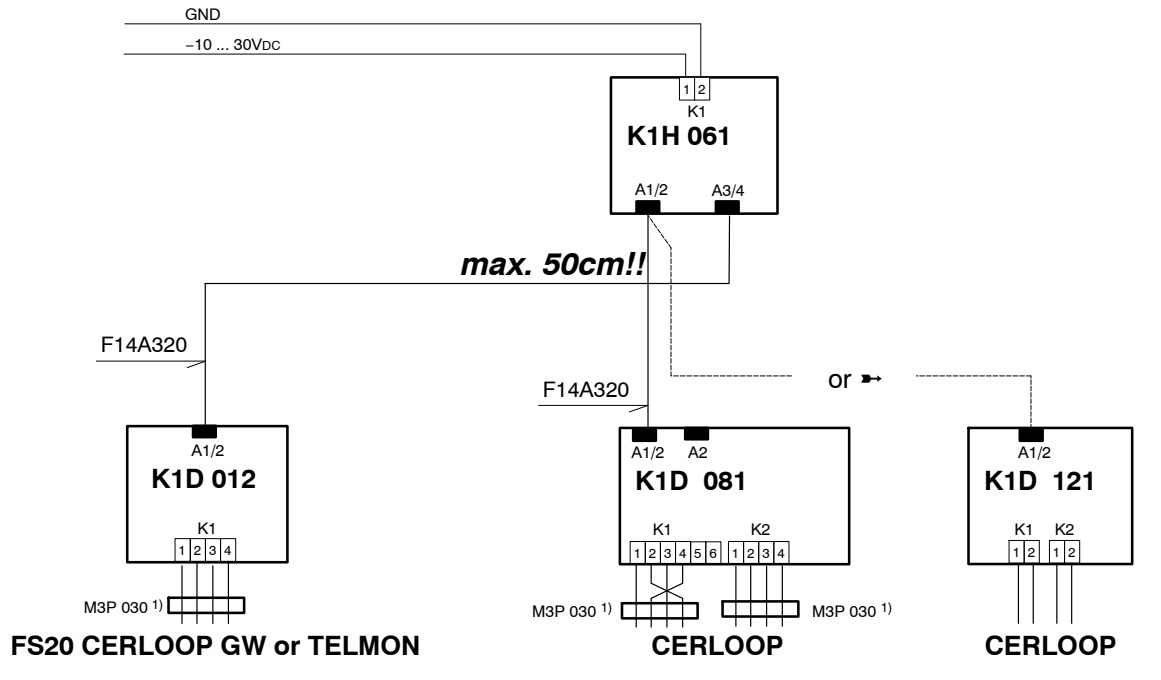


5.2 CERLOOP-Node MK7011

5.2.1 MK7011 using Communication Module K1H022 (application in CS11, CK1142/43)

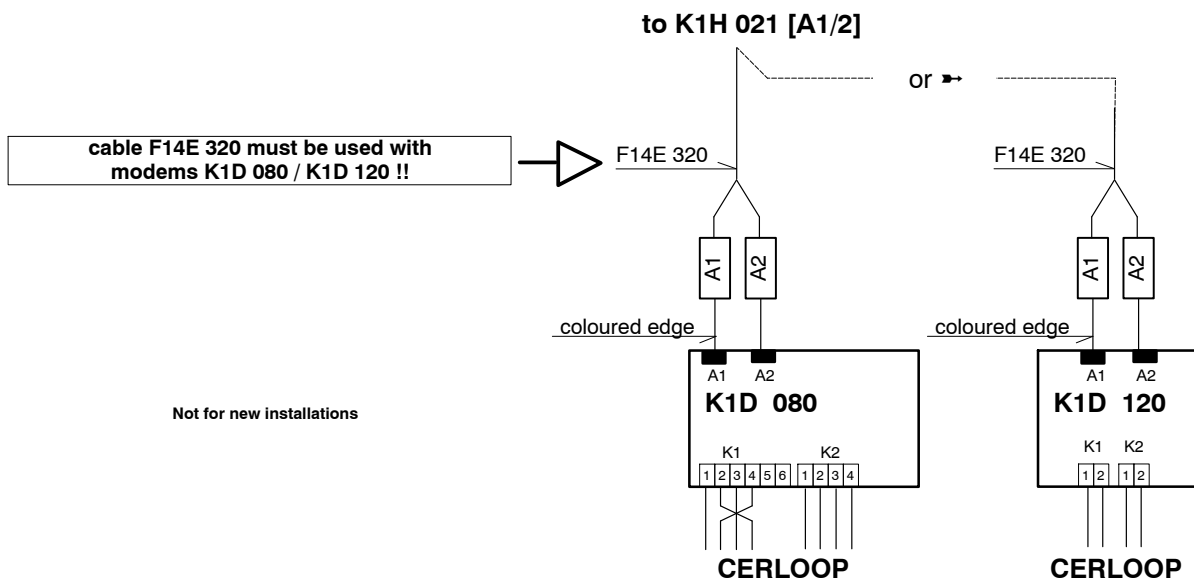
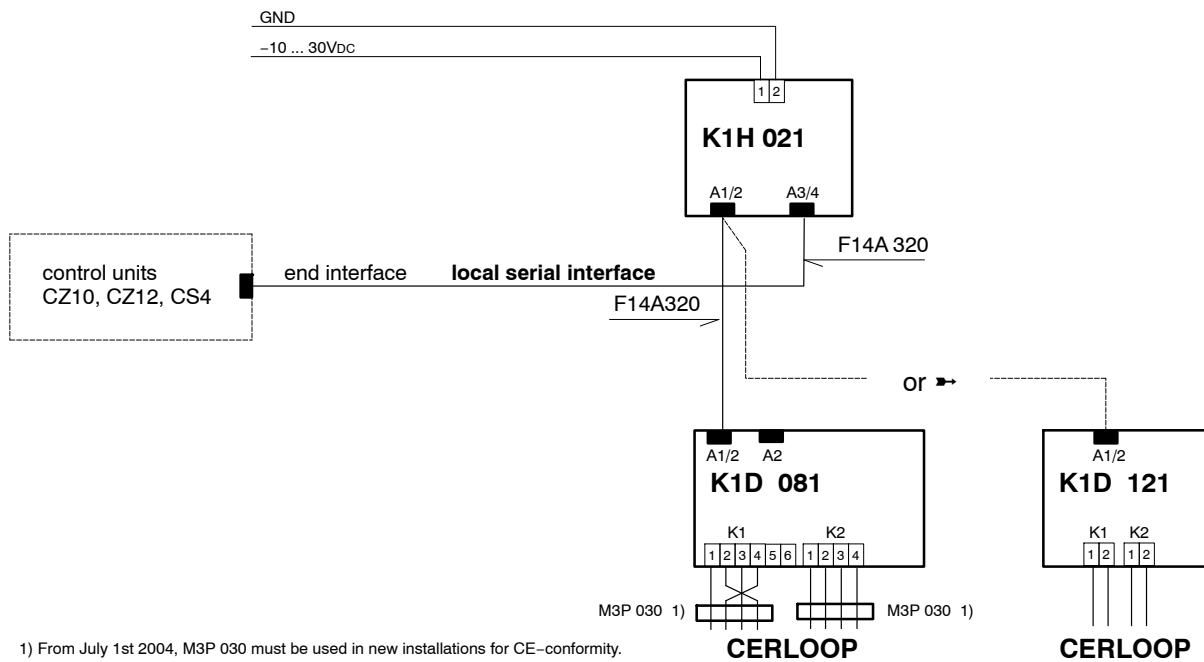


**5.2.2 MK7011 using Communication Module K1H061
(application in FS20 CERLOOP GW or for TELMON connection)**



5.2.3 MK7011 using Communication Module K1H 021 for Central unit CZ10, CZ12, CS4

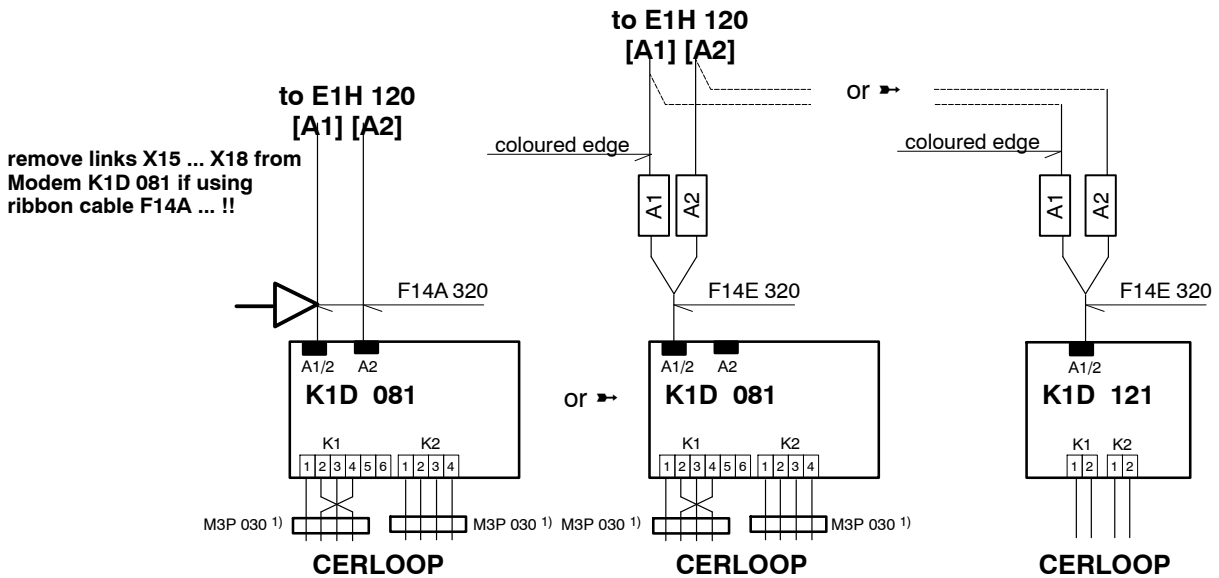
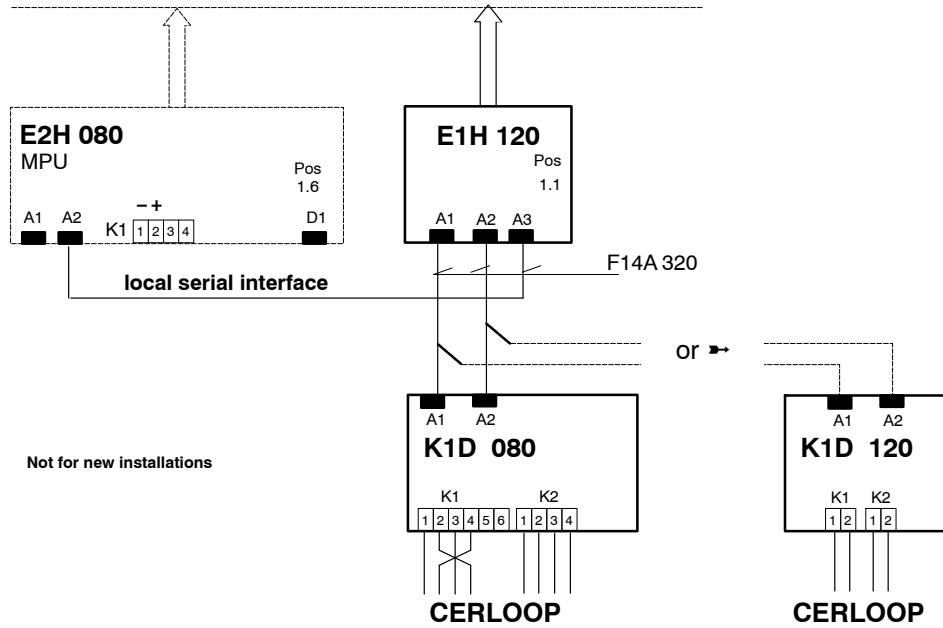
NOT for new installations (replacement module K1H022)



5.2.4 MK7011 using Communication Module E1H 120 for CS100 (no longer on sale)

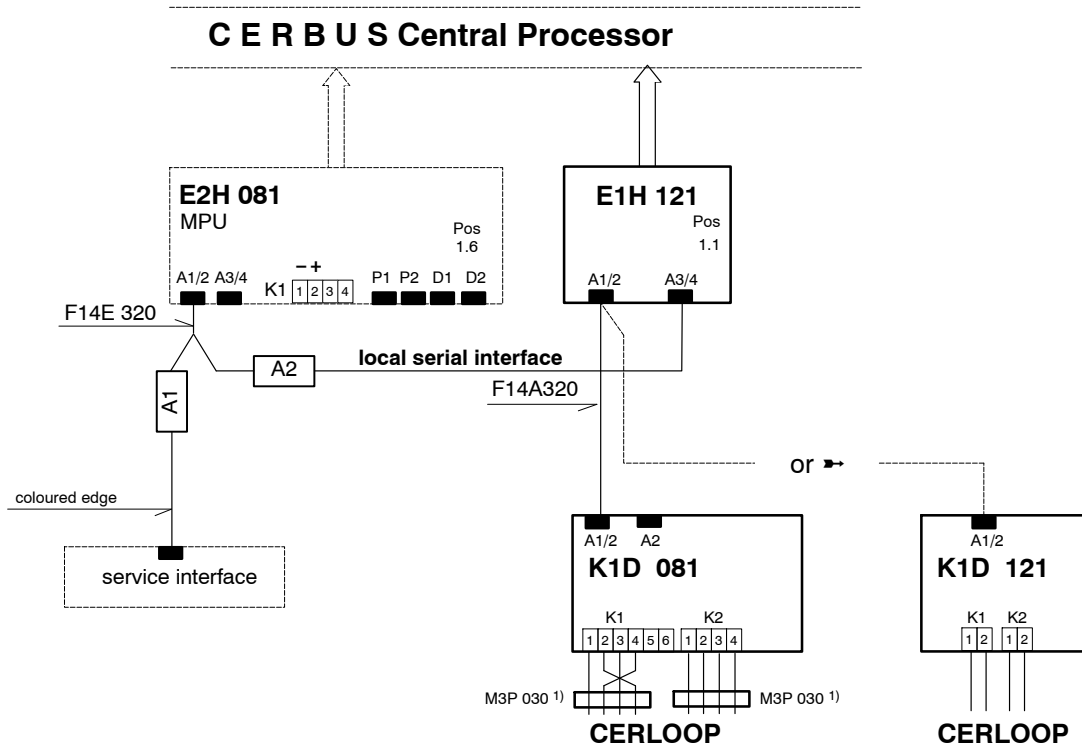
NOT for new installations (replacement module E1H 121)

C E R B U S Central Processor



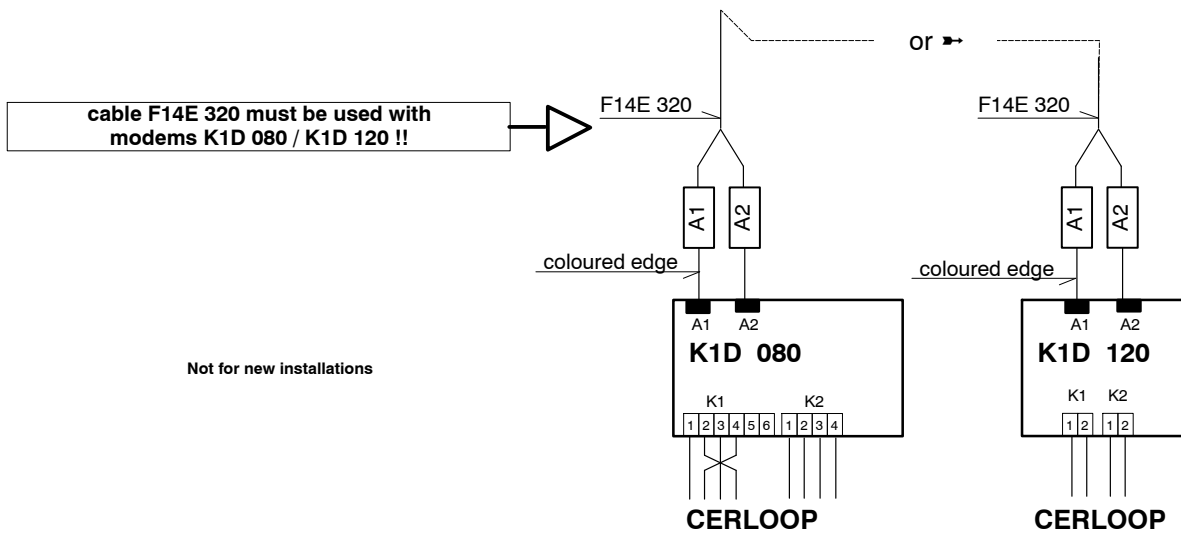
1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

5.2.5 MK7011 using Communication Module E1H 121 for CS100 (supersession E1H020, no longer on sale)



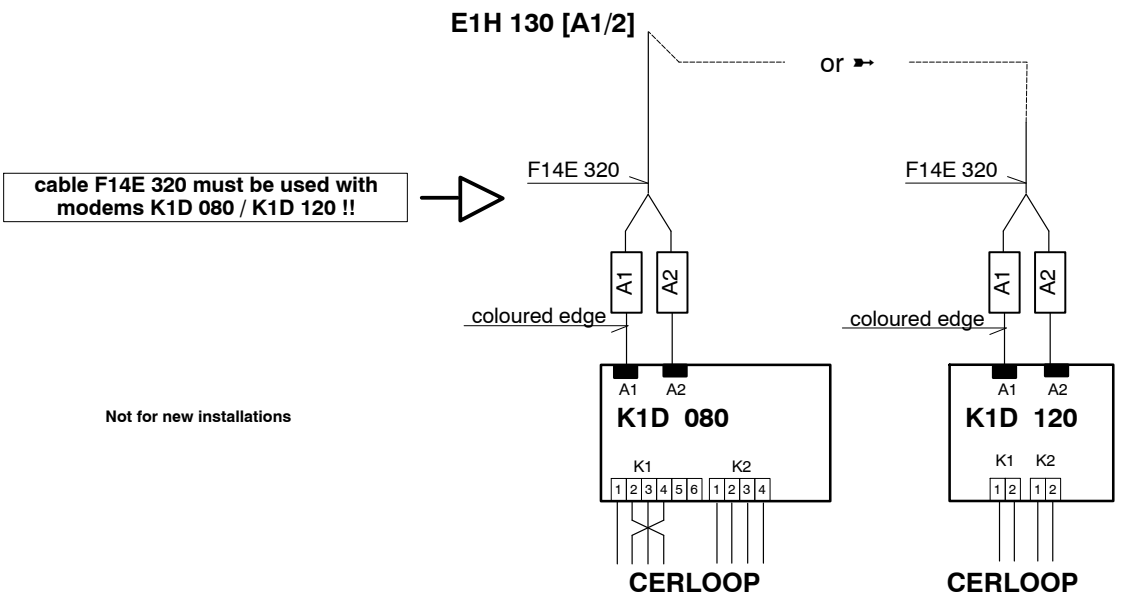
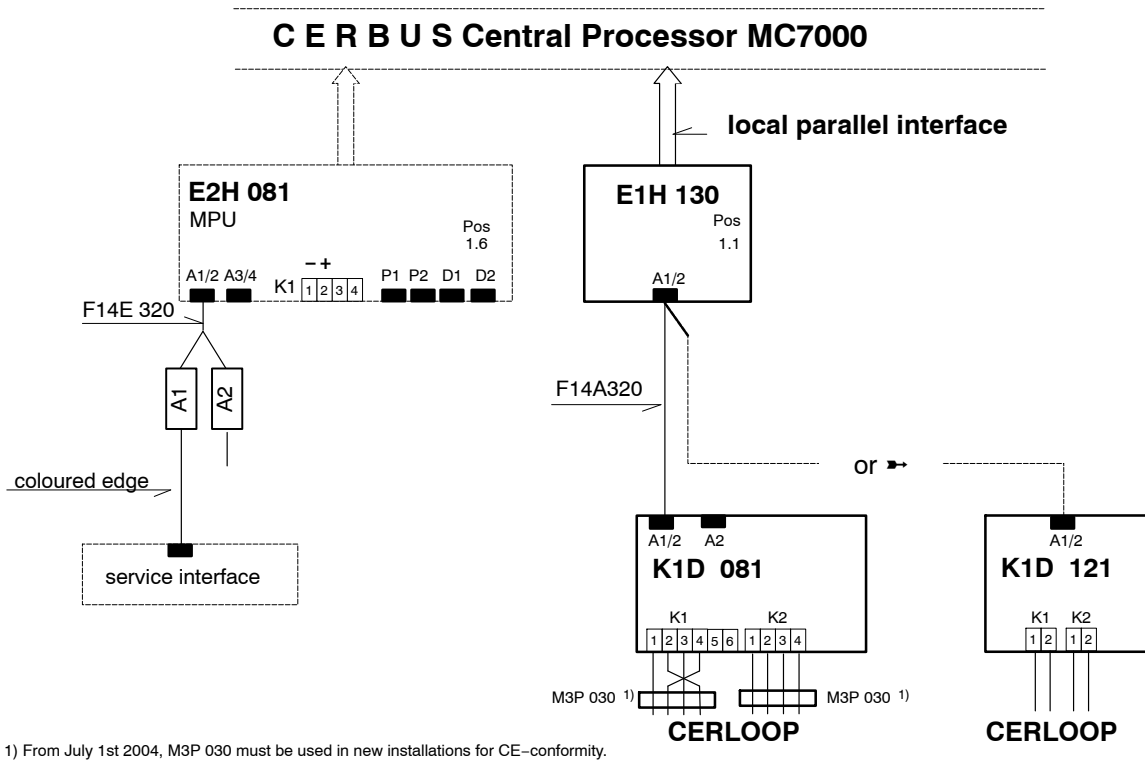
1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

to E1H 121 [A1/2]



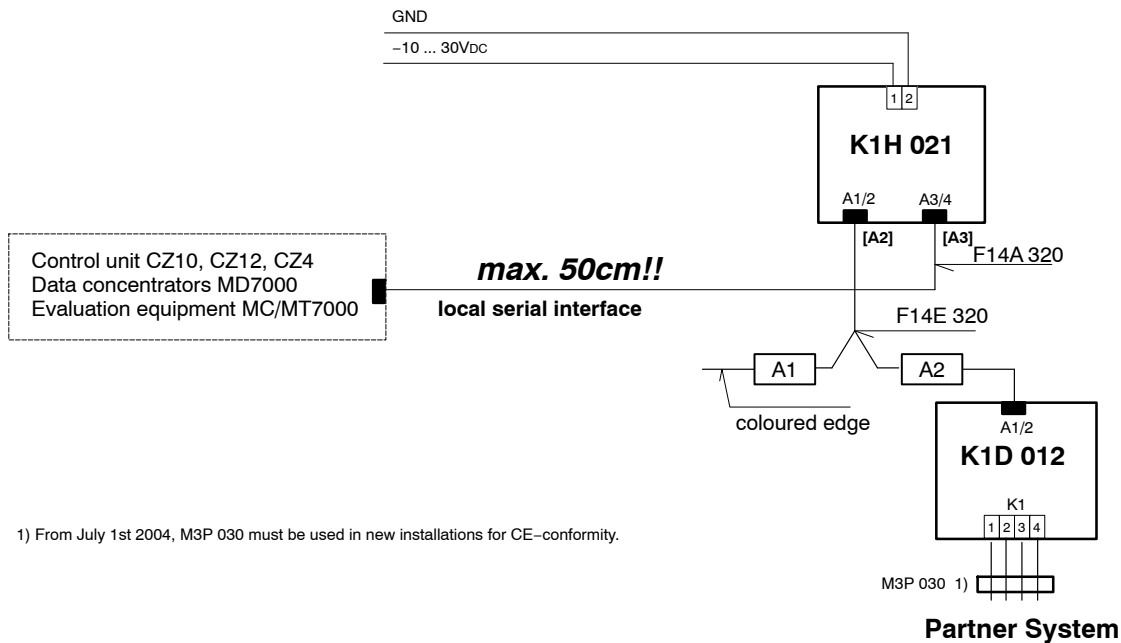
Not for new installations

5.2.6 MK7011 using Communication Module E1H 130 for MT/MM/MF7000
 (no longer for sale)

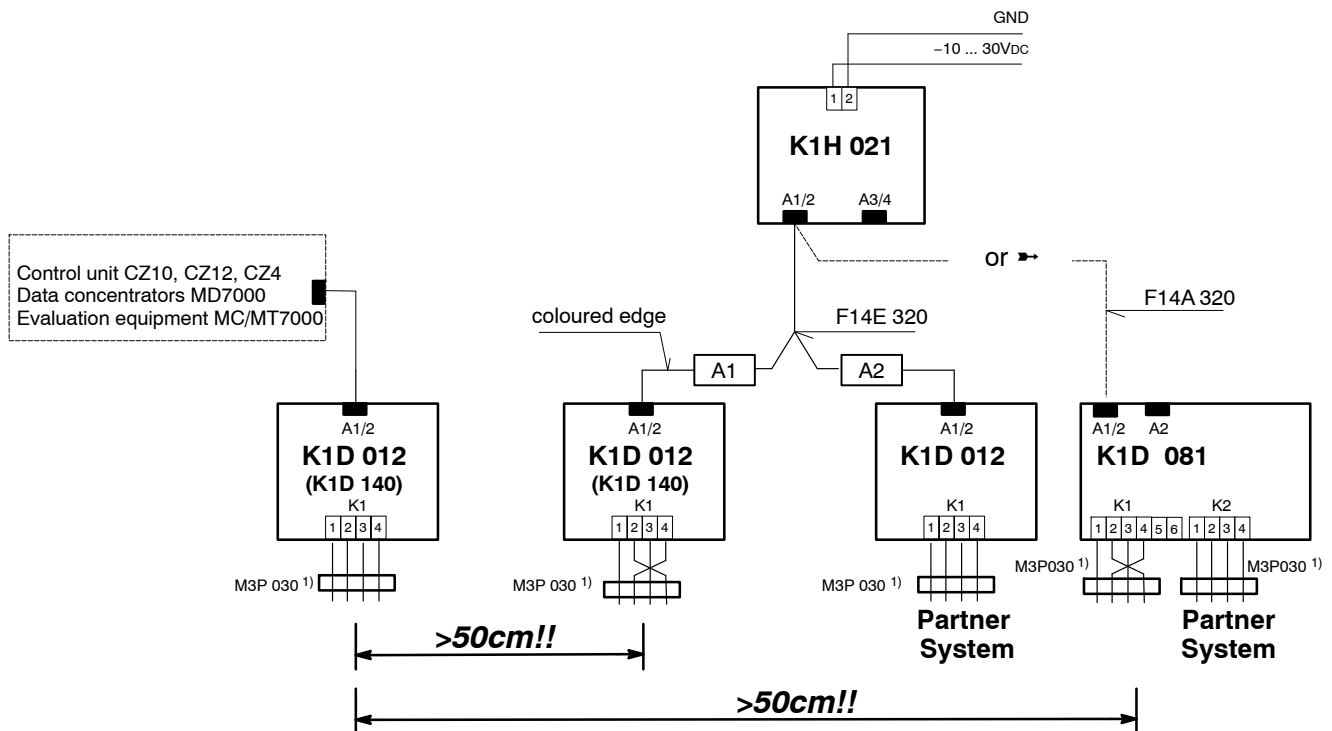


5.3 Communication Unit to Partner-System MK7022 (no longer for sale)

5.3.1 MK7022 in CERBAN network (application in CS10,DMS7000)

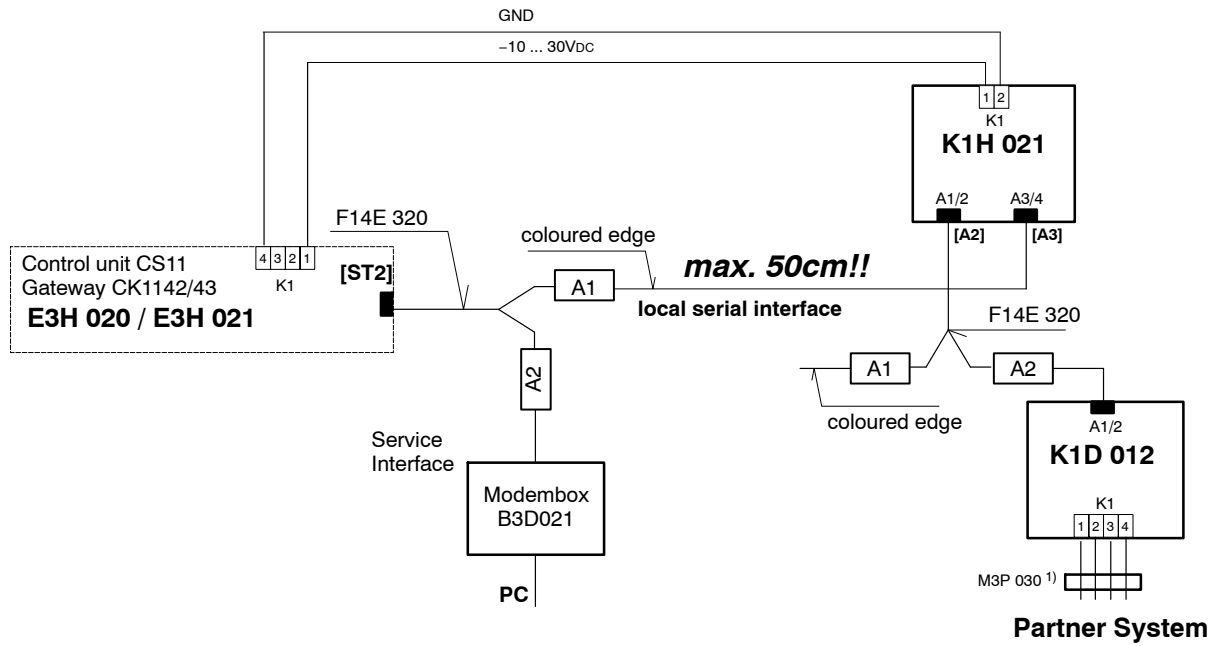


1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

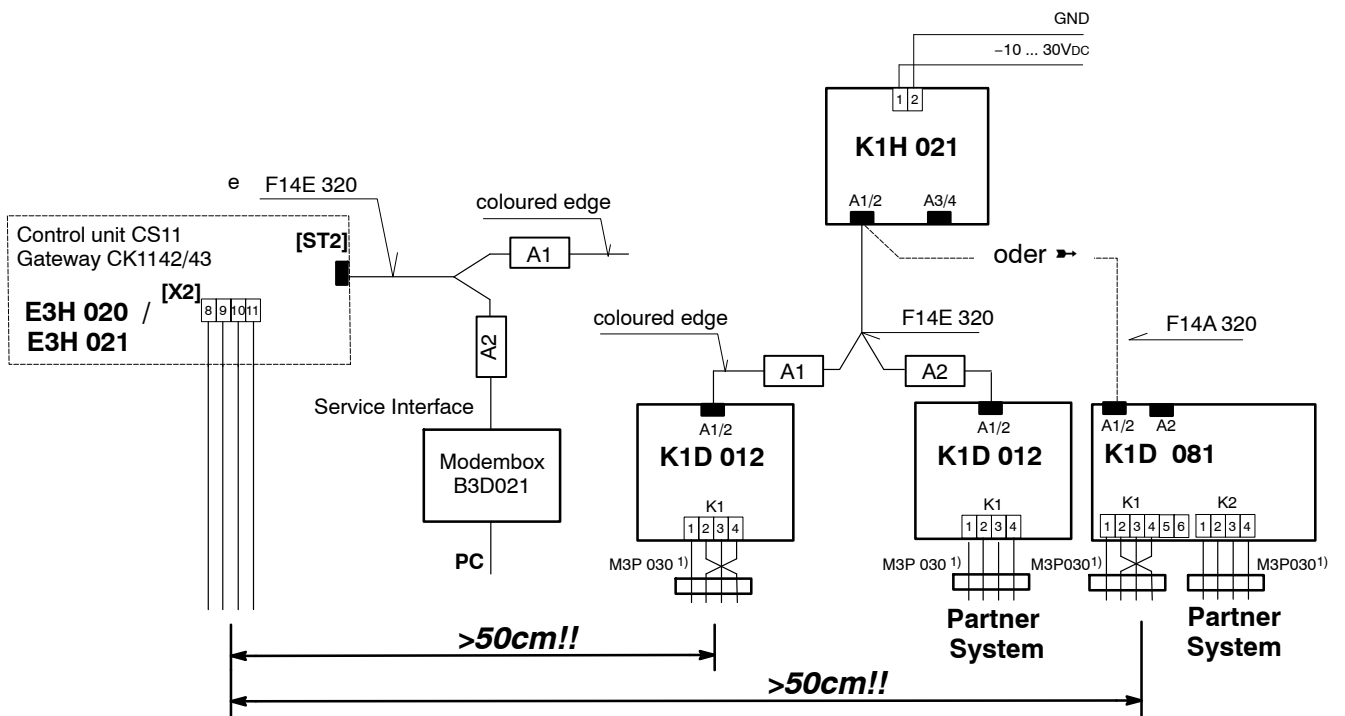


1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

5.3.2 MK7022 in CERBAN network (application in CS11, CK1142/43)

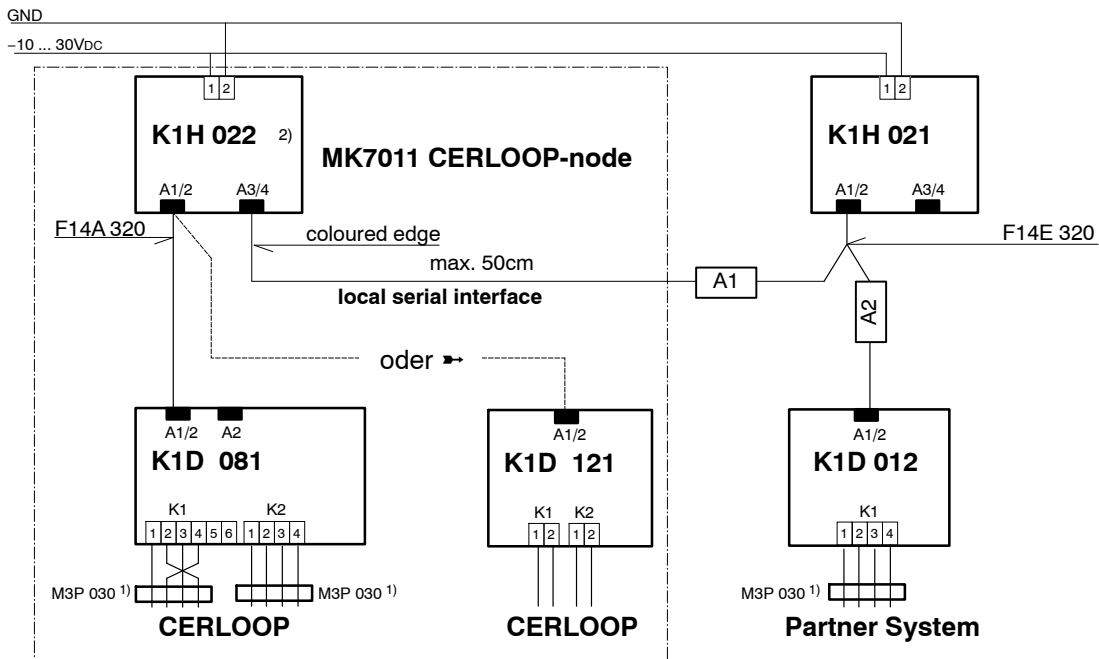


1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

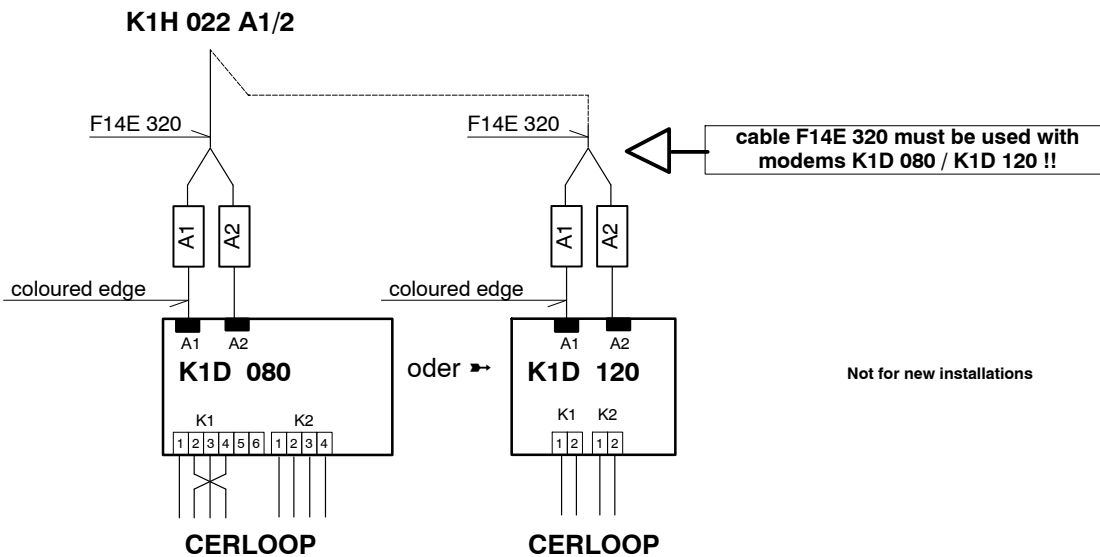


1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.

5.3.3 MK7022 in CERLOOP network



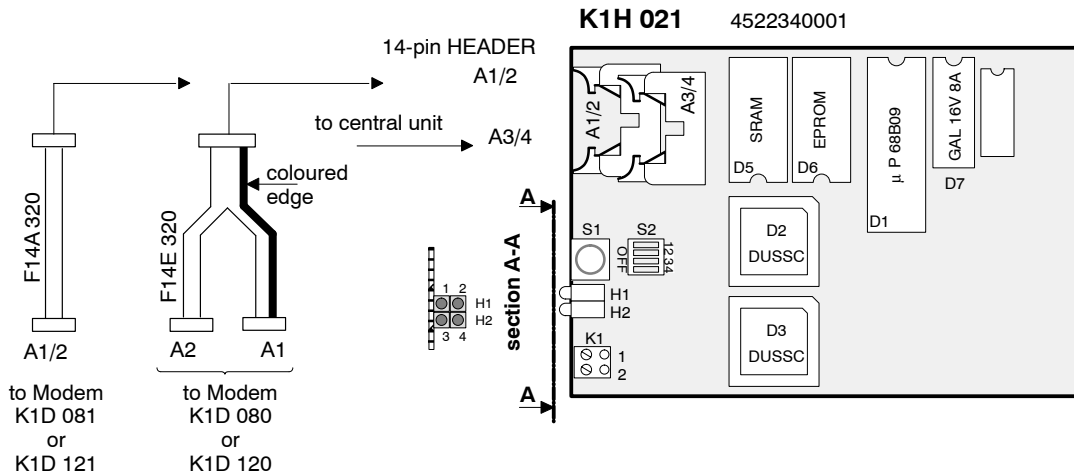
- 1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.
- 2) Replacement for K1H021 in CERLOOP-node



6 Special application of network

6.1 MK7013 CERBAN-Splitter (no longer for sale)

6.1.1 Communication Module K1H 021 to MK7013 CERBAN-Splitter (no longer for sale)

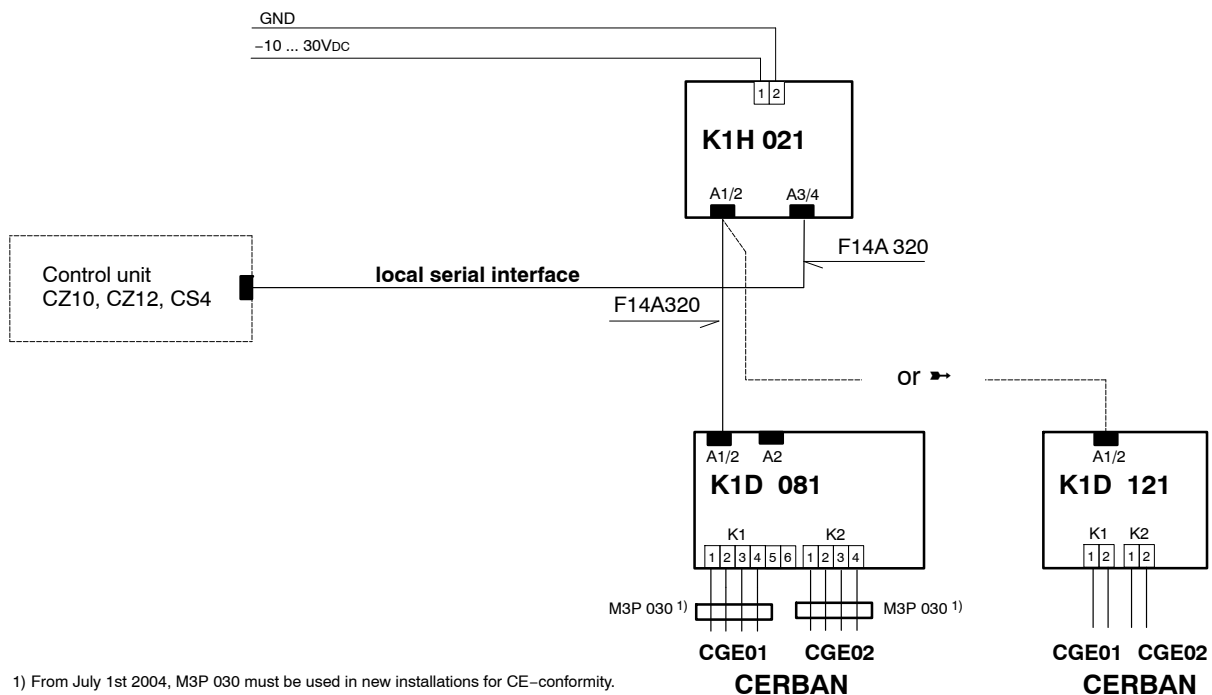


Application	MK7013 CERBAN-Splitter			Note
Pos.	Function connector, LED's, terminals			
A1/2	A1:	end interface	CGE01	network CERBAN
	A2:	end interface	CGE02	
A3/4	A3:	front interface	CGF01 (locale Interface)	data transfer
	A4:	not used		
H1	1	fault	CGE01 [A1]	
	2	fault	CGE02 [A2]	
H2	3	fault	CGF01 [A3]	
	4	no function		
K1	1	- 24Vdc		voltage range 10 ... 30Vdc
	2	GND		

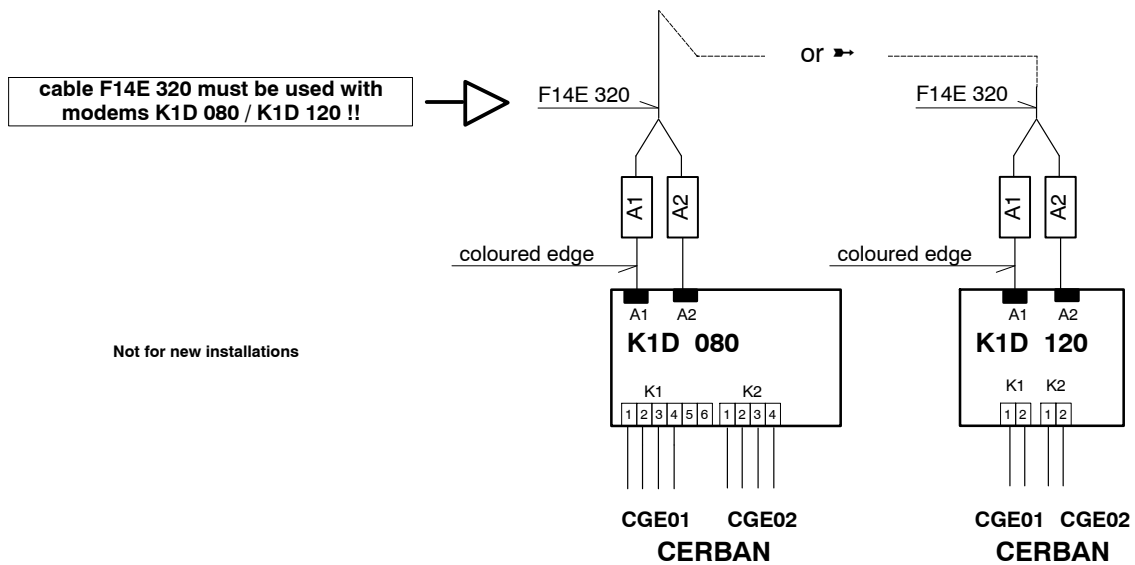
Application	MK7013 CERBAN-Splitter				Note
Pos.	Funktion switches				
Switch S1	Reset				
Switch S2	ON	OFF	Default	Function	
S2 - 1	600	300	300	Baudrate end interface CGE01 [A1]	
S2 - 2	600	300	300	Baudrate front interface CGF01 [A1]	
S2 - 3	600	300	300	Baudrate end interface CGE02 [A3]	
S2 - 4	Test	Normal	Normal	factory test	

Application	MK7013 CERBAN-Splitter			Note
Pos.	Function RAM, EPROM			
D5	SRAM 32k x 8Bit			working memory
D6	file name: CK7040.	EPROM 32k x 8Bit		program memory
D7	file name: PK7001.	GAL16V8A		decoder

6.1.2 Block diagramm CERBAN-Splitter MK7013

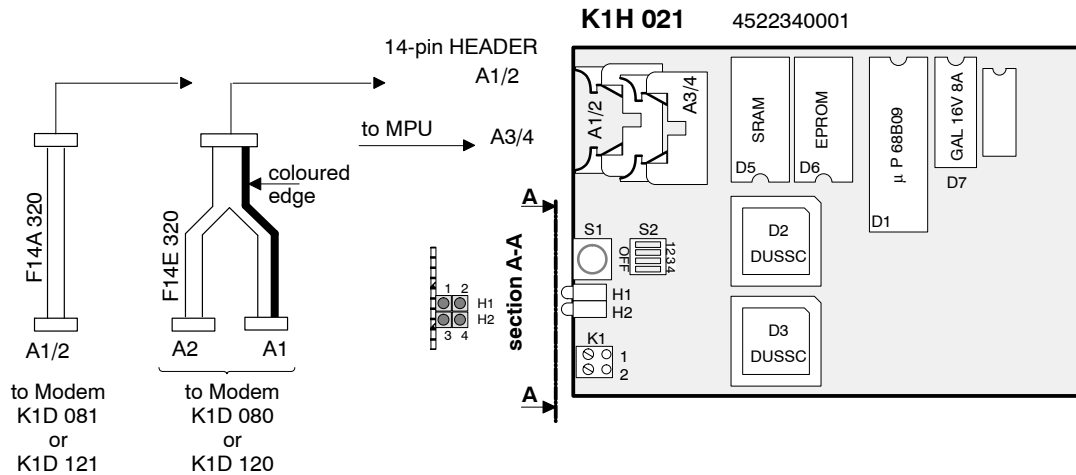


K1H 021 [A1/2]



6.2 MK7022 Partner-System IMS2000 (no longer for sale)

6.2.1 Communication Module K1H 021 to MK7022 System IMS2000 (no longer on sale)

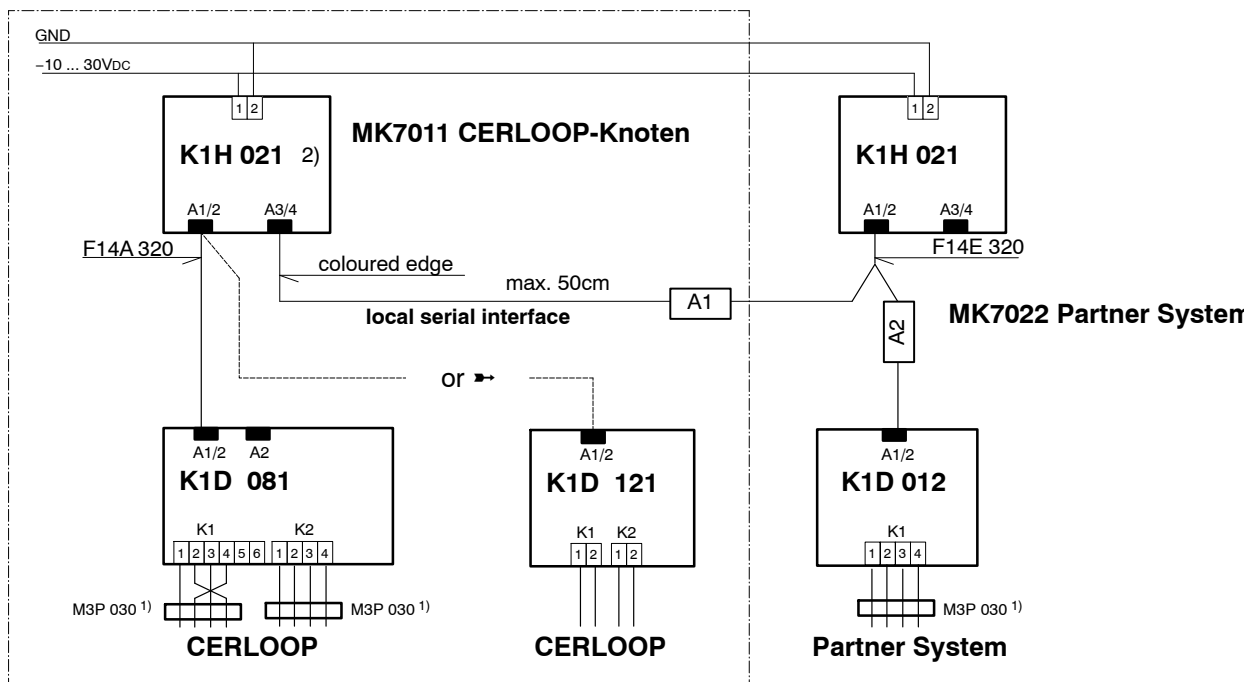


Application	MK7022 Partner System IMS2000				Note
Pos.	Function connector, LED's, terminals				
A1/2	A1:		local interface		network
	A2:		ISO-1745 interface		
A3/4	A3:		not used		data transfer
	A4:		not used		
H1	1	fault	[A1]	DMS7000	
	2	fault	[A2]	HOST	
H2	3	no function			
	4	no function			
K1	1	- 24Vdc			voltage range 10 ... 30Vdc
	2	GND			

Application	MK7022 Partner System IMS2000				Note
Pos.	Funktion switches				
Switch S1	Reset				
Switch S2	ON	OFF	Default	Function	
S2 - 1	600	1200	1200	Baudrate local interface	
S2 - 2	2400	1200	1200	Baudrate ISO-1745	
S2 - 3	NO	NO	NO	no function	
S2 - 4	NO	NO	NO	no function	

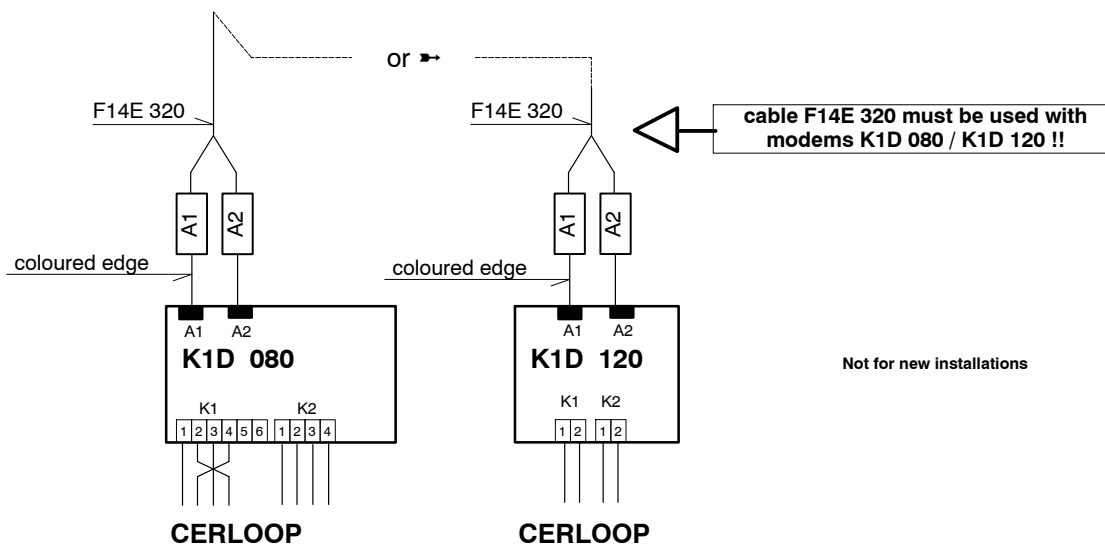
Application	MK7022 Partner System IMS2000		Note
Pos.	Funktion RAM, EPROM		
D5	SRAM 32k x 8Bit		working memory
D6	part no. 4716840001	EPROM 32k x 8Bit (no longer on sale)	program memory
D7	file name: PK7001.____	GAL16V8A	decoder

6.2.2 MK7022 to Partner-system IMS2000 network CERLOOP



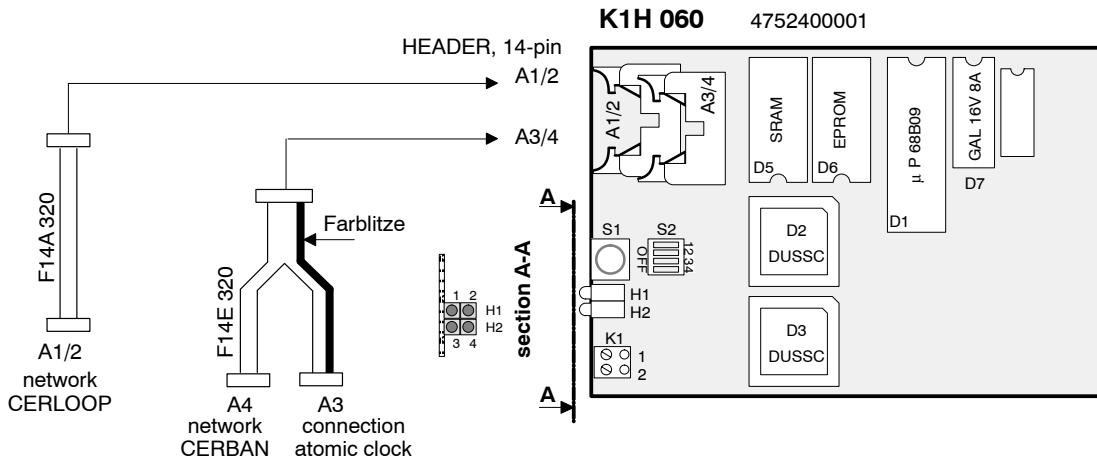
- 1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.
 2) replacement module K1H022

K1H 021 [A1/2]



6.3 MK7024 Atomic clock DCF77 (no longer for sale)

6.3.1 K1H 060 Communication Module to atomic clock DCF77 MK7024 (no longer for sale)

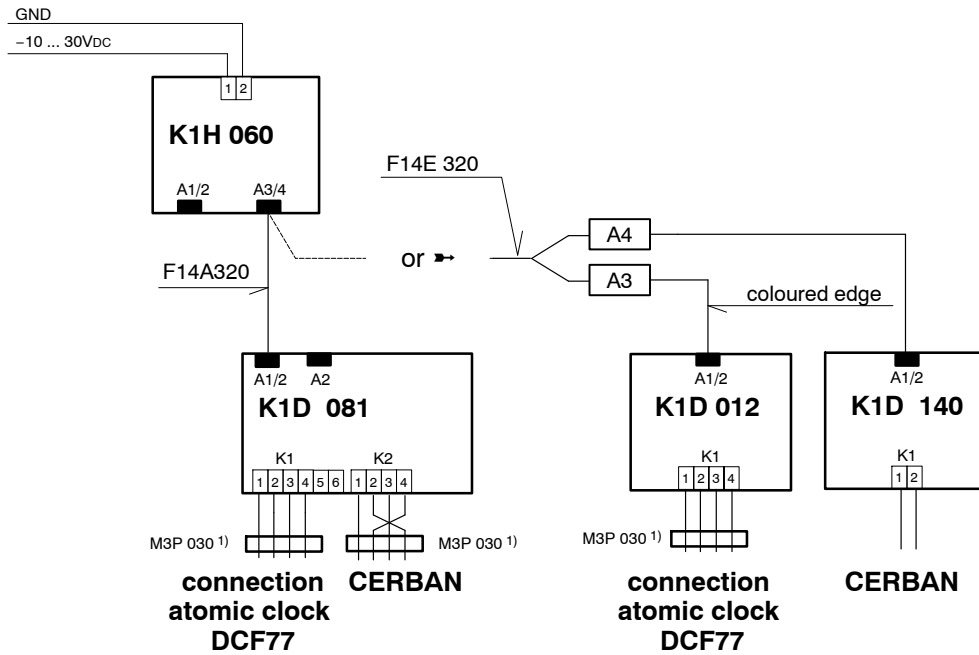


Application	MK7024 atomic clock				Bemerkung
Pos.	Function connector, LED's, terminals				
A1/2	CERLOOP (adresse is fix 860)				network CERLOOP
A3/4	A3: connection atomic clock DCF77				data transfer
	A4: CERBAN front-interface CGF01				netzwok CERBAN
H1	1	fault	LOOP K1	[A1]	
	2	fault	LOOP K2	[A2]	
H2	3	fault	atomic clock DCF77		
	4	fault	CERBAN CGF01	[A4]	
K1	1	-24Vdc			voltage range 10 ... 30Vdc
	2	GND			

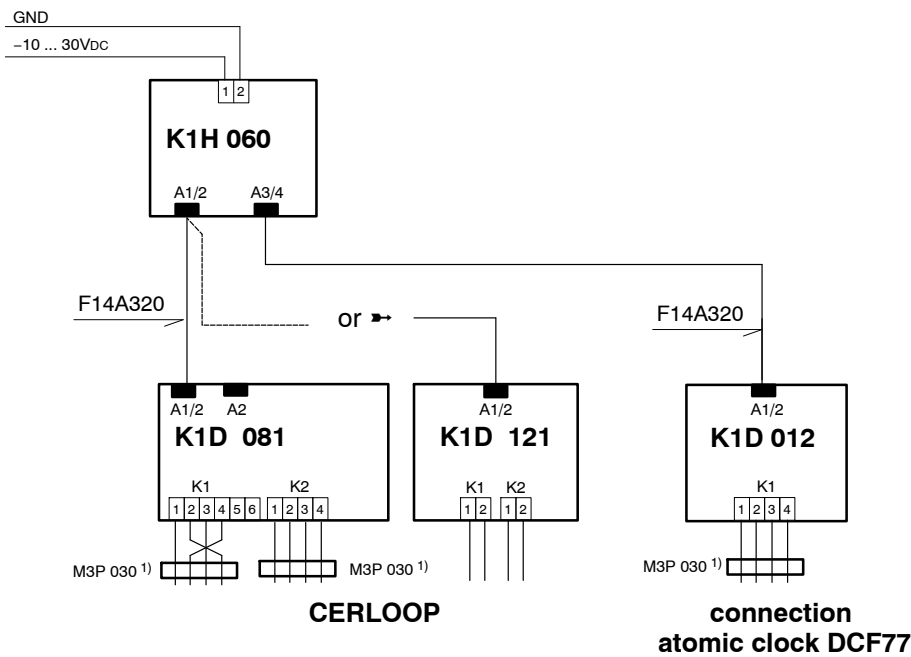
Application	MK7024 atomic clock				Bemerkung
Pos.	Funktion Taster, Switch				
Switch S1	Reset				
Switch S2	ON	OFF	Default	Funktion	
S2 - 1	2400	1200	1200	Baudrate CERLOOP [A1/A2]	
S2 - 2	600	300	300	Baudrate front interface CGF01 [A4]	
S2 - 3	10 min.	1 min.	10 min.	Time-telegram intervall	
S2 - 4	Test	Normal	Normal	only for factory test	

Anwendung	MK7024 atomic clock		Bemerkung
Pos.	Function RAM, EPROM		
D5	SRAM 32k x 8Bit		working memory
D6	file name: CK7030 ._	EPROM 32k x 8Bit	program memory
D7	file name: PK7001 ._	GAL16V8A	decoder

6.3.2 Block diagramm atomic clock DCF77



1) From July 1st 2004, M3P 030 must be used in new installations for CE-conformity.



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