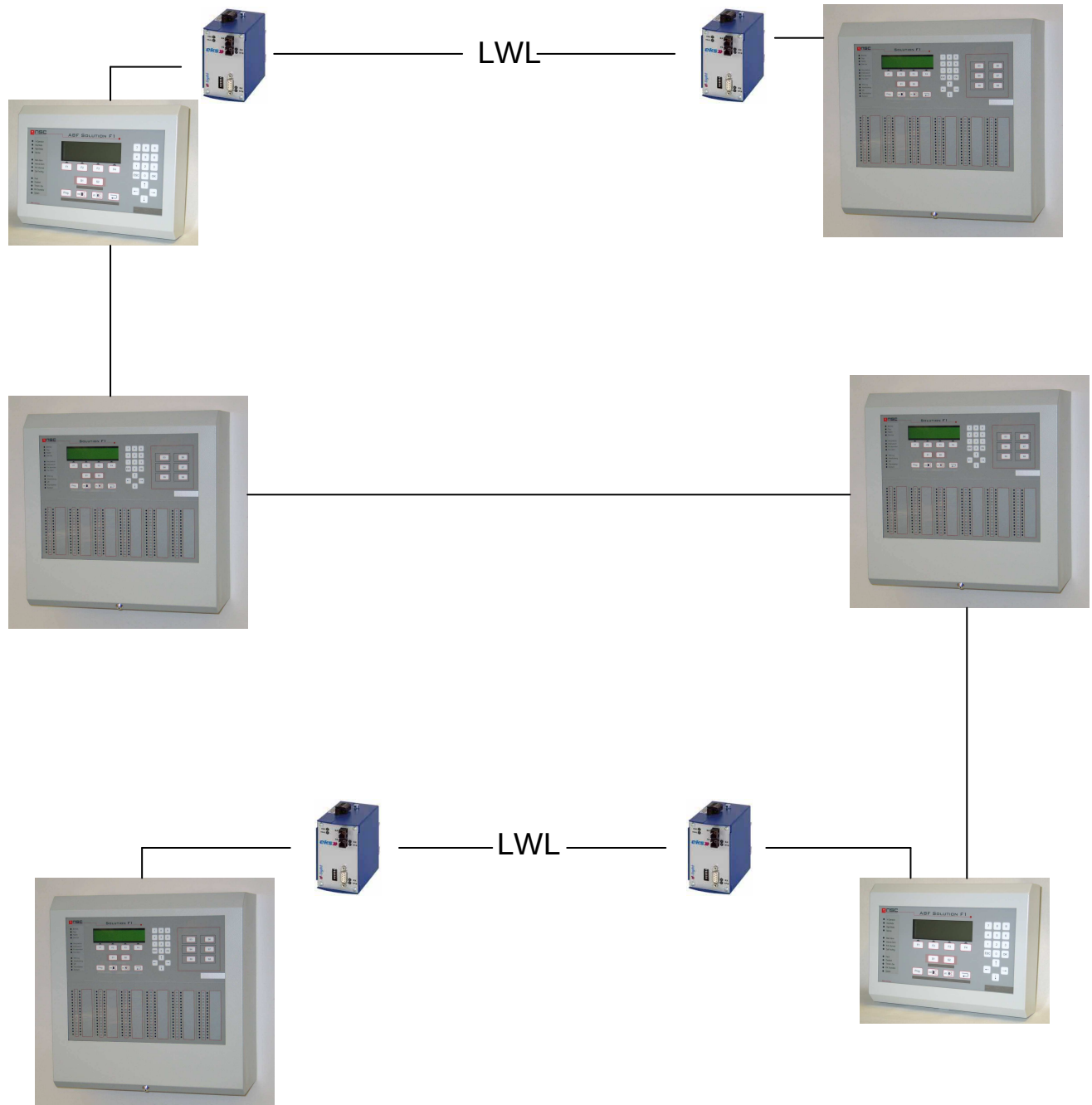


FCP Solution F1 Network Operating and Installation Manual



Issue: October 2013

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1 Information about Firmware

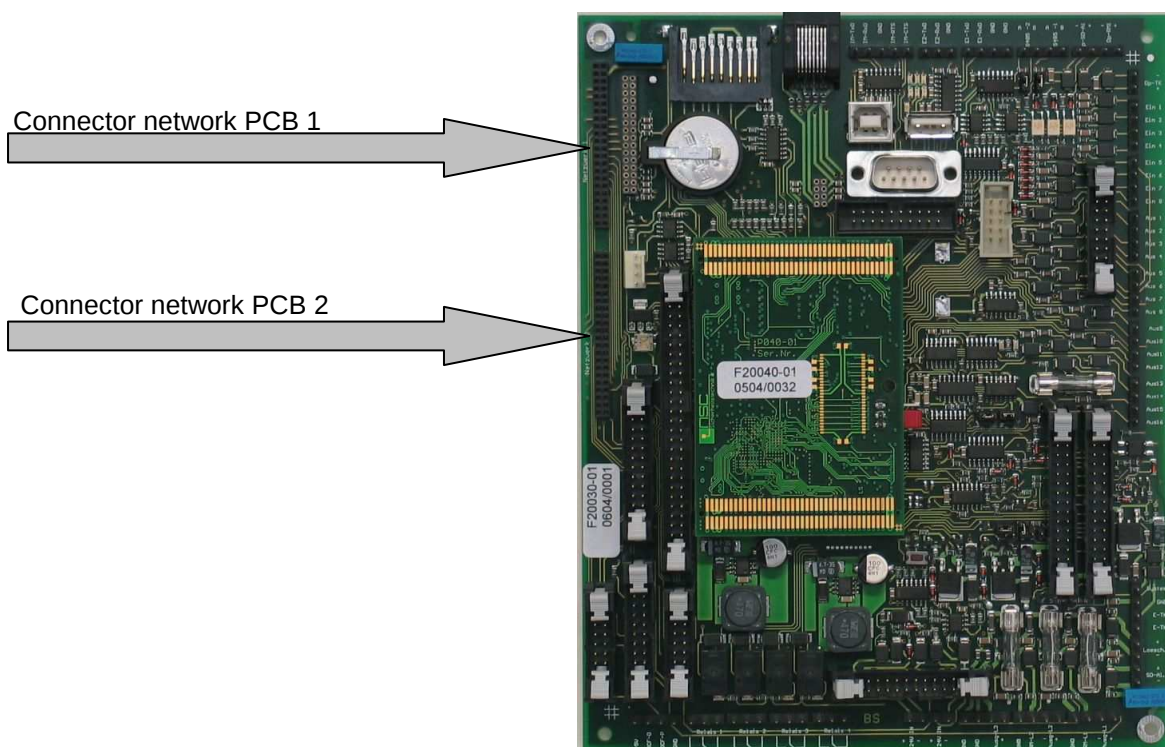
For compatibility it is very important that all networked devices have the same firmware version installed.

When a new device is added to an existing network, it is useful to update all other devices to the actual firmware. This guarantees full functionality and compatibility all over the network.

If an update of all devices is not possible for any reason, the new component should be downgraded to the firmware of the existing panels.

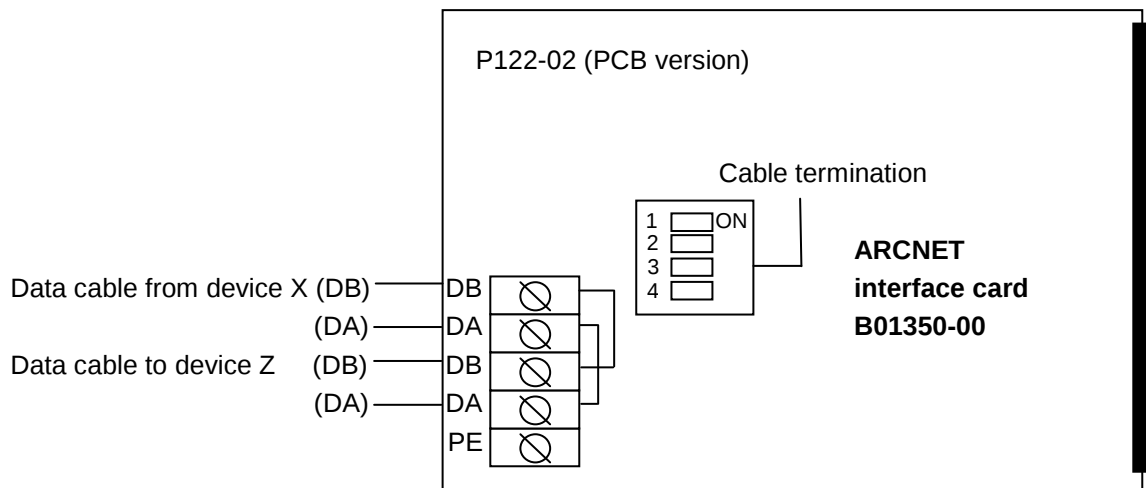
2 Mounting ARCNET PCB on main board

To build a network of several FCP/Remote control panels, each device has to be equipped with at least 1 network PCB B01350-00. To build a redundant network a 2nd slot for a further network PCB is available.

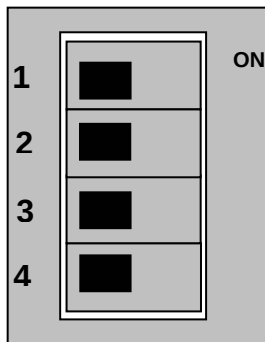


The network PCBs will be mounted on the connectors and fixed by a screw in the housing side wall.

3 Network PCB



DIP switch



DIP switch 1 and 2 will be used to activate the bias resistors to adjust the voltage level in case of open line.

DIP switch 3 and 4 activate the end of line termination (120 Ohm) for the "data cable".

In position **ON** the bias and termination resistors are active.

Resistors have to be active in the first and the last device on the bus. To avoid mistakes, all 4 DIP-switches should always be put into the same position.

4 Cable types/fibre optic converters

The following cable parameters have to be considered:

Wave resistance 100-150Ohm.

Attenuation ≤ 25 DB/km @ 1MHz

Capacity wire/wire ≤ 60 nF/km

Wire square meter $\geq 0,2\text{mm}^2$

The cable has to be "twisted pair" (TP)

Proper cables are i.e.:

Copper:

Cable type	Max. cable length [m] / segment	Max. no. of devices / segment
Li2YCY 0,22	990	32
Li2YCY 0,34	1760	32
Unitronic BUS LD	990	32
Belden 9842	1569	32

For longer distances or more devices you can use ARCNET Hub B01530-00. Up to 10 ARCNET Hubs can be cascaded. Total maximum number of devices is limited to 128.

Fiber optical converters:

Für den Einsatz von Lichtwellenleitern stehen unterschiedliche Konverter zur Verfügung:

Converter for multi mode fibre

ARCNET / Fibre Optic converter, LCON-1

- Converter of ARCNET interface data to fibre optic signals (**Multimode 850nm**)
- Distances of peer-to-peer connections **up to 2.600 m**

– Surface mounted housing for DIN rail according DIN 50022

Technical specifications :

Operating voltage : 18 - 30 V DC

Current consumption : 200 mA max

Data rate : 5 MBit/s max

Distance of fibre optic cable : max. 2.600 m

Optical terminal : ST 850 nm

Housing : DIN rail according DIN 50022

Operating temperature : 0 to 70°C

Dimensions (W x H x D) : 82 x 93 x 23 mm





**ARCNET / Fibre Optic converter LCON-2,
2 optical channels**

- 2 channel converter
- other specs like B01550-00

Converter for single mode fibre



ARCNET/RS485 – Fibre Optic Converter DL-485

- Converter of ARCNET interface data to fibre optical signals
(Single mode 1310nm)
- Status LEDs for Operation, Data Receive and Fault
- Surface mounted housing for DIN rail according DIN 50022

Technical Specifications:

Operating voltage: 12 - 30 V DC
 Current consumption: 200 mA max.
 Operating temperature: -40 bis +70 °C
 Data rate: max. 3 MBit/s
 Optical budget: 17 dB
 Fibre cable distance: max. 25 km
 Optical cable: Single Mode 1310nm
 Optical connector: ST
 Housing: DIN Rail according to
 DIN 50022



ARCNET/RS485 - Fibre Optic Converter DL-485 / 2 optical channels

- 2 channel converter
- all other specs like B01551-00



ARCNET/RS485 - Fibre Optic Converter DL-485RS / optical redundant (loop topology)

- Redundant converter of ARCNET interface data to fibre optic signals (**Single mode 1310nm**)
- Fibre Cable installation as loop
- Status LEDs for Operation, Data Receive and Fault
- Surface mounted housing for DIN rail according DIN 50022

Technical specifications:

Operating voltage: 12 - 30 V DC
Current consumption: 200 mA max.
Operating temperature: -40 bis +70 °C
Data rate: 156,25 kb
Optical budget: 17 dB
Fibre cable distance: max. 25 km
Optical cable: Single-Mode 1310nm
Optical connector: ST
Housing: DIN Rail according to nach DIN 50022
Dimensions (WxHxT): 61 x 133 x 115 mm

The connection of the converter and the DIP switch settings you can extract from the installation manual of each converter.

5 Configuration

In installer menu under "settings" you will find "**7. Network**" on the 2nd page. Here the basic settings for network configuration will be done.

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Settings 2

1. Installer code	5. Scan RS485
2. Language	6. Modem
3. Interfaces	7. Network
4. Convent. Detect.	8. Flash Update

Cancel

more

Enter

Settings 2 of FCP

1. To change installer access code → Jump to **Menu 75**
2. To change the panel's language → Jump to **Menu 76**
3. To enter sub menu of 3 serial interfaces RS-232. It is possible to configure the interfaces with different protocols and different baud rates → Jump to **Menu 77**
4. To configure alarm thresholds for conventional detectors so that it is possible to use conventional detectors of different manufacturers → Jump to **Menu 78**
5. After pressing 5. the RS-485 devices connected to the RS-485 interfaces will be scanned. The number of found RS-485 devices will be displayed in the last but one display line → Jump to **Picture 79**
6. Opens input screen "Modem" → Jump to **Menu 80**
7. Opens input screen for network settings → Jump to **Menu 81**
8. Facilitates a software update of the main board using the configuration software → Jump to **Menu 82**

For another settings menu please press **F3 ("more")** to enter sub menu "**Settings 3**" → Jump to **Menu 38**

81	Network Network device : 003 Device no. : 003 Device type : 000 Zone offset : 03000 Offset/Device no. : Zone offset Cancel Sections scan save	Network settings Each network card has its own ID-number in the range 1-255. This ID-number will be determined by input a number in line Network device. Please take care, that each number only exists one time in the whole network. The device number is the number that will be displayed in the panels LCD in case of a message. Existing device types are: 1. FCP = 000 2. RCP = 001 (Remote Control Panel) The difference is, that in a RCP all incoming messages will be stored in the event memory. A FCP only will save its own messages. Zone offset determines the starting number of zones for this FCP. Possible settings for Offset/Device no. are: - Device no.: Zone offset has to be "00000". The device number and the zone number will be displayed. - Zone offset: in case of a message from a detector/module the zone number plus configured zone offset will be displayed and <u>not</u> the device number. Attention: using this system the network IDs have to be consecutive for all connected devices. - without: Zone offset has to be "00000". In case of a message from a detector/module the device number will not be displayed. By this setting all possible zone numbers "1-1024" can be split to different panels. By selecting Sections you can define limitations concerning display of messages and control possibilities for networked devices. The standard setting allows display of every message from all networked panels and also unlimited controlling of all panels. Sections can be defined for networked panels and for devices communicating by "FRP protocol", i.e. LCD repeater panel -> menu 88
88	Sections 1. Arcnet 2. RS485 device Cancel Enter	Sections Sections can be defined for networked panels and for devices communicating by "FRP protocol", i.e. LCD repeater panel Network sections -> menu 89 FRP protocol sections -> menu 90
89	Sections 0001/1000 Network-ID 001 Zon. 0001 - Zon. 0010 ↓+1 ↑-1 Selection ->+10 <--10 >0001: No. 001 Zon.0001 - Zon.0010 0002: No. 002 Zon.0038 - Zon.0040 0003: No. 003 Zon.0400 - Zon.0499 Cancel +100 -100 save	Network sections To limit the display of messages and the control possibilities on a certain panel in a network, a maximum of 1000 sections can be configured. In the left hand example 3 sections for 3 different network IDs have been programmed. As soon as any section has been defined for a certain network ID, all common messages, i.e. "Power supply fault", from this ID will automatically be displayed additionally to messages of the configured zones.

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```

Sections                                0001/1000
RS485 device 1
Network-ID 001 Zon. 0001 - Zon. 0010
↓+1 ↑-1 Selection ->+10 <--10
>0001:Addr 01 No.001 Zon.0001 - Zon.0010
0002:Addr 02 No.001 Zon.0011 - Zon.0040
0003:Addr 03 No.001 Zon.0041 - Zon.0099
Cancel +100 -100 save
  
```

FRP protocol sections

After having selected a device out of the list of a maximum of 63 devices a maximum of 1000 sections can be defined to limit the display of messages, i.e. on a LCD repeater panel.

In the left hand example 3 sections for 3 different "FRP protocol" devices have been programmed. On the first device, i.e. a LCD repeater panel, only messages from zone 1 to zone 10 will be displayed, on the second device only messages from zone 11 to zone 40 and on the third device messages from zone 41 to 99.

As soon as any section has been defined for a certain "FRP protocol" device, all common messages, i.e. "Power supply fault", from this ID will automatically be displayed additionally to messages of the configured zones.

6 Diagnosis

In menu "Diagnosis" – "Internal modules" – "Network interface card" – "Details" you will find following information about the 2 possible network channels:

26.2	<table> <tr> <th></th><th>Arcnet 1</th><th>Arcnet 2</th></tr> <tr> <td>Station ID</td><td>: 001</td><td>001</td></tr> <tr> <td>Next ID</td><td>: 002</td><td>002</td></tr> <tr> <td>Receive</td><td>: OK</td><td>OK</td></tr> <tr> <td>Token seen</td><td>: OK</td><td>OK</td></tr> <tr> <td>Send</td><td>: OK</td><td>OK</td></tr> <tr> <td>Counter Reconfig.</td><td>: 000</td><td>000</td></tr> <tr> <td>Cancel</td><td></td><td></td></tr> </table>		Arcnet 1	Arcnet 2	Station ID	: 001	001	Next ID	: 002	002	Receive	: OK	OK	Token seen	: OK	OK	Send	: OK	OK	Counter Reconfig.	: 000	000	Cancel			Display of network adapters Installed network adapters will be displayed with the following information: • Station ID (1-255) is the network number of the device (device no. set in the network configuration Menu 81). • Next ID (1-255) is the device number, to which the token will be passed. • Receive (OK or F) shows, if the network card is receiving data from another device. • Token seen (OK or F) shows, if the network card has seen the token even if it doesn't take part at the network communication. • Send (OK or F) shows activity of the driver for sending. • Counter Reconfig. counts, how often this card initiated a network reconfiguration. Comparing this counter with other devices gives information about a damaged network component.
	Arcnet 1	Arcnet 2																								
Station ID	: 001	001																								
Next ID	: 002	002																								
Receive	: OK	OK																								
Token seen	: OK	OK																								
Send	: OK	OK																								
Counter Reconfig.	: 000	000																								
Cancel																										

In menu "Diagnosis" – "Network" a list of connected network devices will be shown.

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No.	Type	Zone offset	Mode
>001	FCP 001	01000	Day * <
002	FCP 002	02000	Night
003	RCP 001	00000	Night
004	FCP 000	00000	Night
005	FCP 000	00000	Night
006	FCP 000	00000	Night
Cancel		Detectors	Detail

Network data

Here you see a list of all network devices. The consecutive number corresponds to the configured network-ID of the device. In the column **Type** the device type and the device number will be displayed. The next column shows the configured **Zone offset** for each device. This zone offset will be added to the original zone number in case of messages from detectors/zones, if the display system for the network is configured to **zone offset**. The mode (day or Night) specifies, at which devices the delay for the transmission device is active or not.

You can scroll through the list of network devices using the cursor keys. The * marks the device you are actual working on.

By pushing the key "**Detectors**" (**F3**) you can see the detector data of the selected network panel.

By pressing "**Details**" (**F4**) you will get further information about the selected device → Jump to **Menu 27**

27	Network ID 002 FCP 002 ID-1 :002 Timeout 000 ID-2 :002 Timeout 000 Status 1 :00000000 Message :0951 from message :0951 Cancel Details	Details of network devices The ID of first and second network card will be displayed and additionally you can see if there are still messages in the pipeline to be send to this device. If the counter behind "Message" is different to the counter behind "from message" not all messages have been transferred to this device. Timeout shows missing communication to another network device in seconds. After 90 seconds a network fault will be displayed. The bit sequence "Status 1" contains the following status information from right to left: //bit 0 = Waiting for Acknowledge //bit 1 = last message not confirmed //bit 2 = Message synchronization //bit 3 = End of message synchronization //bit 4 = Active delay //bit 5 = Transmission device disabled //bit 6 = Main alarm For further information please press "Details" (F4) → jump to menu 27.1
27.1	Send-/Receive status 1000001 ↑↓# Send index 4573 Start index 0200 No. of detectors 504 Receive Index 704 Receive Timeout 20 Timeout transm.release 30 cancel Send ↑↓ Stop Receive	Detector details of network devices In this menu receive and transmit of detector data between network devices can be controlled. The register "Send-/Receive status" has following meaning: //bit 0 = waiting for release //bit 1 = got release to send data //bit 2 = request for detector data //bit 3 = receiving detector data //bit 4 = sending data to web server //bit 5 = given release to send //bit 6 = sending necessary //bit 7 = sending data The arrows in line 1 show receive and transmit activity. '#' signalises an occupied transmit buffer. Send index value of 4573 means, that all detector data have been send to the selected network device. The start index is the memory location, where entry of detector data for the selected network device starts. The "no. of detectors" value represents the received quantity. After successful receive the receive index value

		has to be the sum of start index + no. of detectors. Communication can be manually controlled by the function keys: F2 = send detector data F3 = communication stop F4 = receive detector data
--	--	---

6.1 Fault messages

The fault messages will be displayed in the following manner:

FCP xxx Network-ID yyy/k

Here are:

FCP xxx:	the number of the FCP showing the fault message
Network-ID yyy	the network ID of the disturbed device
k	the channel (network card 1 or 2)

6.2 Extended Diagnosis

Extended diagnosis has to be activated manually.

Prog. – Installer – 8.Settings – more F3 – more F3 – options – F2.

Display

After activation of extended diagnosis you can see the Arcnet status bits in the menu:

Prog – 4.Diagnosis – 4.Network – select **this** device (with the * at the end of the line) –Details F4

```

Network ID 001                                FCP 001
ID-1   :001 Timeout R000 T000
Status : 00000011 0111 0100 nnid 004
ID-2   :001 Timeout R000 T000
Status : 00000011 0111 0100 nnid 006
Send in : 051 033
Send out: 051 033          Checksum 000
cancel                               Details
  
```

Timeout Reconfig : counter for reconfiguration bit from network adapter

Timeout Token : seconds counter for missing token

Status: Status register (8-bit) Diagnosis status register (8-bit)

Nnid : counter for recognition of new "Next ID".

Send in : message counter transmit buffer, message ID counter transmit buffer

Send out : if no message to be send message ID will be send for monitoring purpose

Checksum : counter for checksum errors

Normal operation

status register	0000 0001	or	0000 0011
diagnostic status register	0111 0000		

No network connection

status register	0000 0000		
diagnostic status register	0010 0000	or	0000 0000

Network card stop

status register	0000 0000
diagnostic status register	1010 0000

You can try now to disable and enable the transmitter.

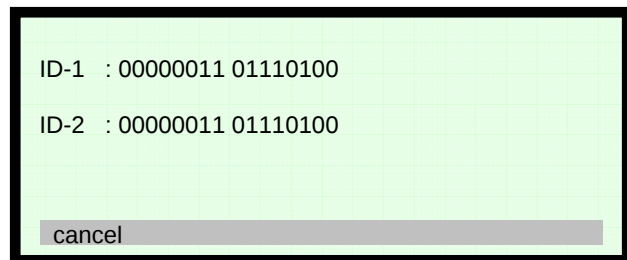
Prog – 4.Diagnosis – 3.internal modules – 5.Network card – Details F4 – Off F2 – On F3

If this doesn't work, a panel restart is necessary.

Further details

Status display of network adapters from right to left

//bit 0: adapter mounted
 //bit 1: Transmitter released
 //bit 2: new next ID
 //bit 3: ID set
 //bit 4: sending packet
 //bit 5: wait for acknowledge
 //bit 6: restart
 //bit 7: -
 //bit 8: RAM error
 //bit 9: packet can't be send
 //bit 10: Reconfiguration
 //bit 11: fault no ID configured
 //bit 12: fault double ID



7 Controlling

01	Main menu 1. Switch on/off 2. Alarm counter 3. End user code 4. Diagnosis Cancel Installer Enter Display on network devices Main menu FCP 001 1. Switch on/off 2. Alarm counter 3. End user code 4. Diagnosis Cancel FCP Installer Enter	General Main menu for end user This menu appears immediately after pressing "Prog". The functions have the followings meanings : 1. To switch on / off detectors, input-/ output modules, day/night mode, zones and general outputs → Jump to Menu 02 2. Indication of the alarm counter. This alarm counter cannot be set back. It is a 4 digit number (1 – 9999) Menü 03 3. To change the end user code → Jump to Menu 04 4. To jump to the diagnosis menu → Jump to Menu 05 The push button "cancel" (F1) leads to the normal status indication of the FCP. The function "FCP" (F2) is only available in networked fire control panels. After pressing F2 a list of all networked devices appears Menü 1.1 . The push button "Installer" (F3) is to use for the installer company only. It leads to the menus for service and configuration. The push button "Enter" (F4) selects (activates) the function which is marked by a black background. Instead you can also select the function by pressing the no. left in front of the functions (here : 1 – 4).
01.1	choose active device No. 001 : FCP 001 ↑+1 ↑-1 Selection -> +10 <- -10 >001 FCP 001 Zone offset 10000 < 001 FCP 002 Zone offset 20000 001 RCP 003 Zone offset 00000 001 FCP 000 Zone offset 00000 zurück all Selection	FCP selection On networked systems here you can choose a device for which the next switching function should be done. You can scroll to a device by the cursor buttons and then activate this device by pressing "Selection" (F4). The next enable/disable function then will be executed for the chosen panel. To send a common command to all network devices you can push "all" (F3).

8 Start up

On starting the panel the recognized network cards will be displayed.

Initialisation

```

1. Internal Modules           : 02
2. Network cards             : 02
3. Modem                     : 01
4. RS485 device              : 03
  
```

The network will configure itself automatically, that means, each device will send its data to all other devices. When new devices will be recognized or former known devices are missing now, a message "Fault network configuration" will be generated

In menu "Diagnose" under topic 4 "Network" by button F2 "error" a table of new or missing devices can be displayed.

17

No.	Type	Zone offset	Mode
>001	FCP 001	01000	Day *<
002	FCP 002	02000	Night
003	RCP 001	00000	Night
004	FCP 000	00000	Night
005	FCP 000	00000	Night
006	FCP 000	00000	Night
Cancel Error Details			

Network configuration 001/002				
>No.	Type	ID1	ID2	Error
001	FCP 002	002	002	new
002	FCP 003	-	-	missing
Cancel all ok ok				

Network configuration

The fault table on the left hand means, that FCP 2 has been recognized newly and it has build in 2 network cards with ID 002.

Furthermore FCP 3, which has been connected and stored in memory in former times, now is missing.

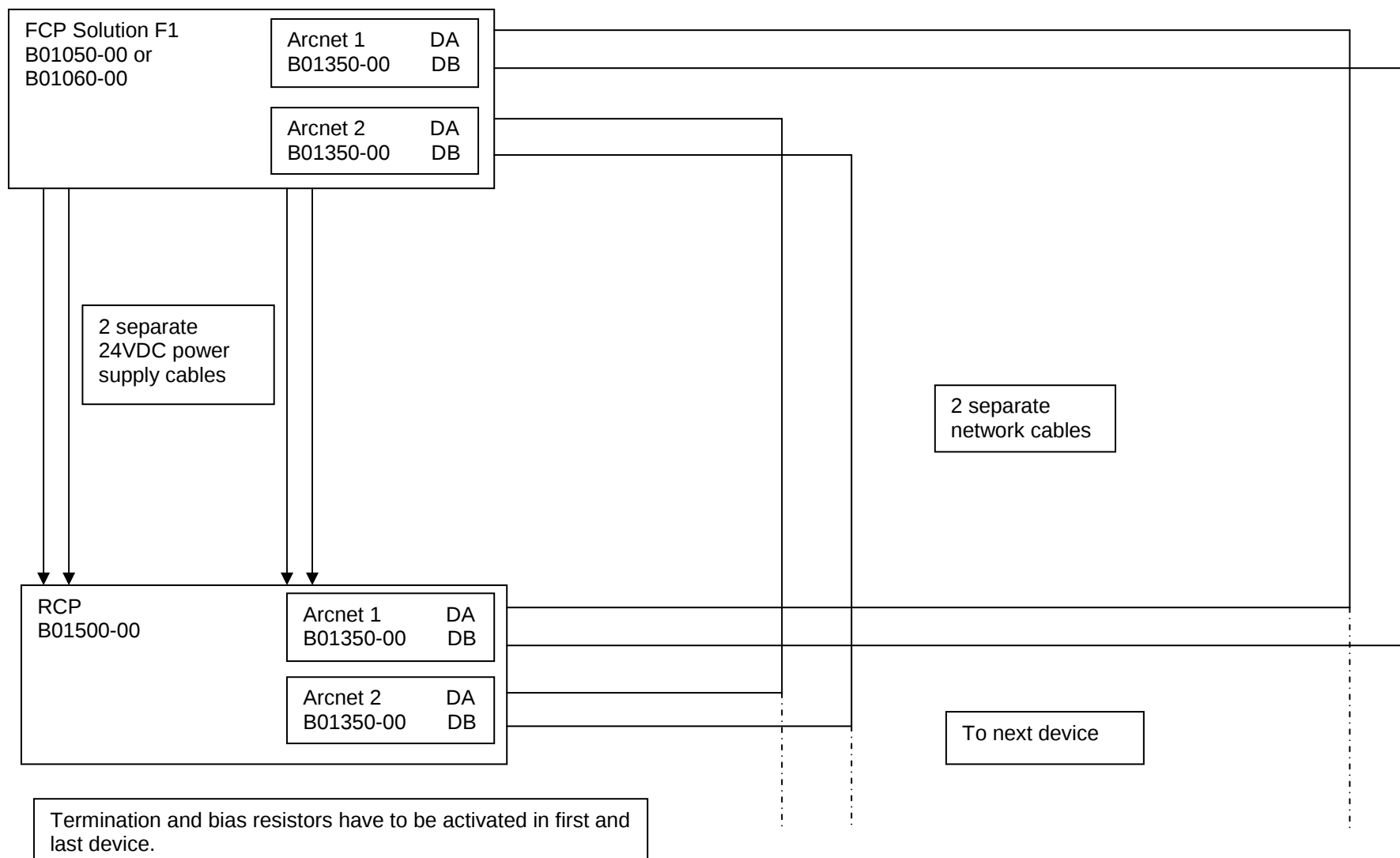
By pressing "ok" each changing can be stored in flash memory individually, by pressing "all ok" all modifications will be stored at once.

9 Automatic controlling

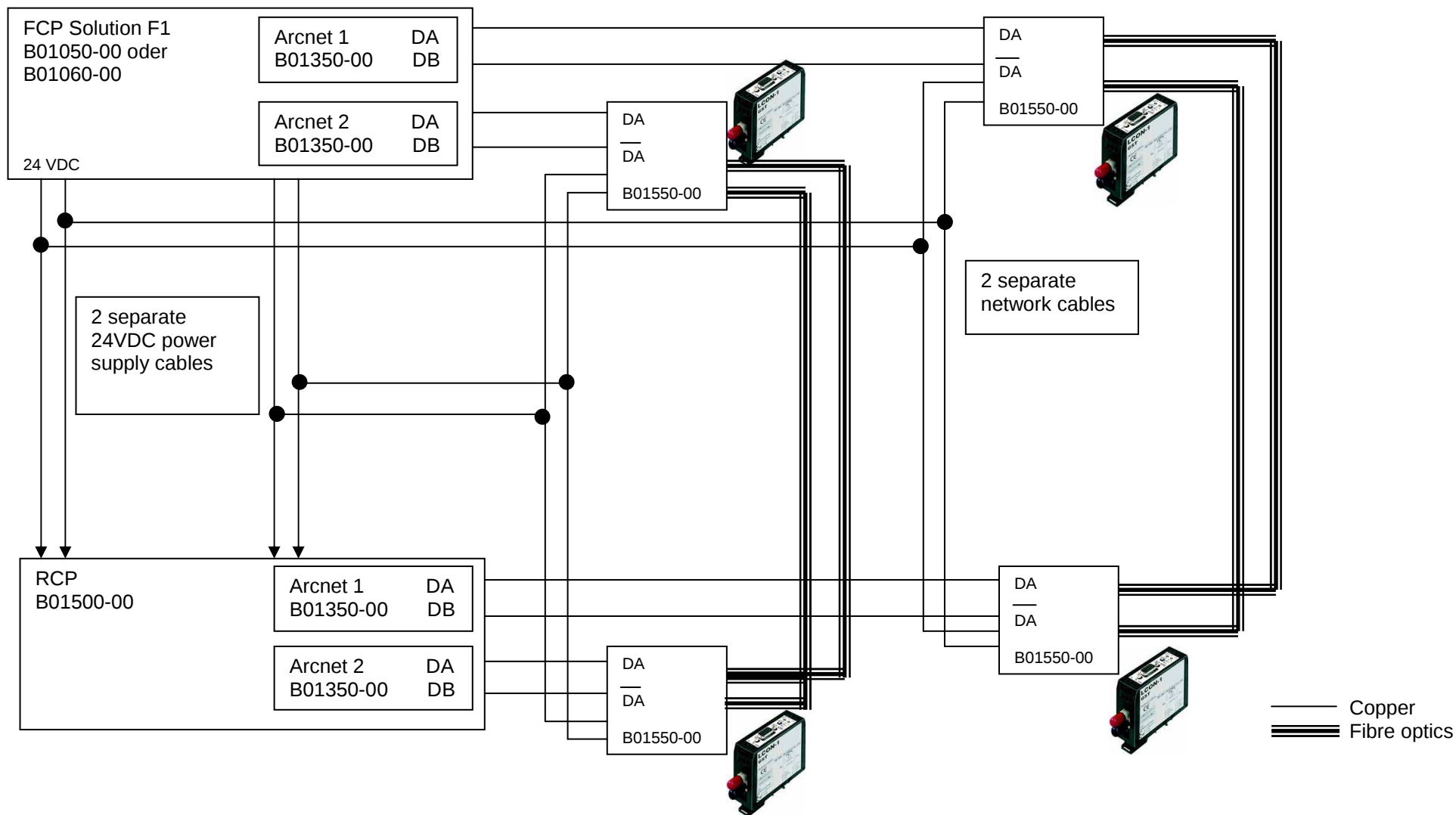
Actually the following trans-sectored functions are possible:

- Activation of outputs, relays and power outputs on main board of device A by a message of device B.
- Activation of outputs, relays and power outputs on main board of device A by a special key or an input of device B.
- On/Off of zones/detectors of device A by a special key or an input of device B.
- Activation of outputs or relays on loop modules of device A by a special function key or an input of device B.
- On/Off of zones/detectors of device A by a special function key or an input of device B.

10 Redundant copper connection between B01350-00 and B01550-00



11 Redundant network with multi mode fibre optical converter B01550-00



12 Network with single mode fibre optical converter B01557-00 as optical loop

