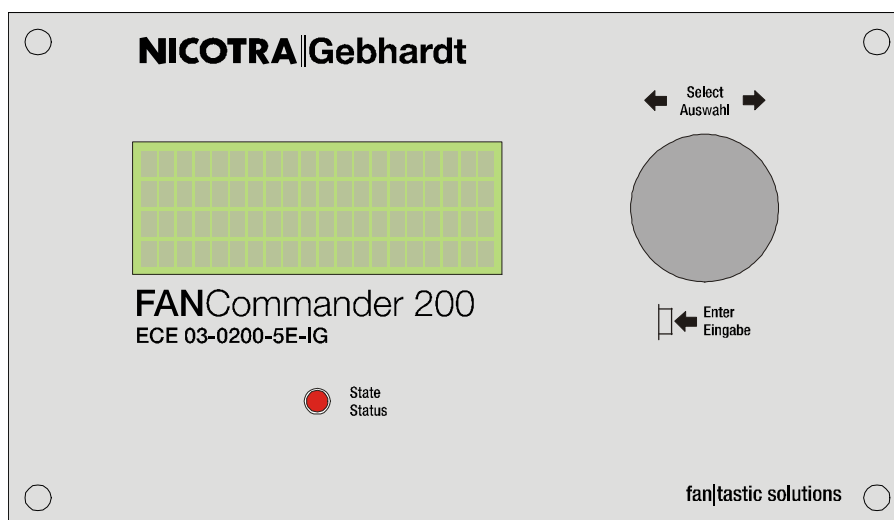


# Operating Manual

## ECE 03-0200-5E-IG “FANCommander 200”



Version: 2.7  
Date: 15 March 2011

**Note:**

Nicotra||Gebhardt reserves the right to change without notice.



**Warning**  
Before installing and commissioning the Nicotra||Gebhardt GBUS-**FAN**Commander 200, you must read all safety instructions and warnings carefully including all the warning labels attached to the equipment. Make sure that the warning labels are kept in a legible condition and replace missing or damaged labels.

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# 1 General Information

## 1.1 Definitions and Warnings



**Warning**  
 For the purpose of this documentation and the product warning labels, "Warning" indicates that death, severe personal injury or substantial damage to property can result if proper precautions are not taken.



**Caution**  
 For the purpose of this documentation and the product warning labels, "Caution" indicates that minor personal injury or material damage can result if proper precautions are not taken.



**Note**  
 For the purpose of this documentation, "Note" indicates important information relating to the product or highlights part of the documentation for special attention.

**Qualified personnel**  
 For the purpose of this Instruction Manual and product labels, a "Qualified person" is someone who is familiar with the installation, mounting, start-up and operation of the equipment and the hazards involved.  
 He or she must have the following qualifications:

- Trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety procedures.
- Trained in the proper care and use of protective equipment in accordance with established safety procedures.
- Trained in rendering first aid.

**Use for intended purpose only**

The equipment may be used only for the application stated in the manual and only in conjunction with devices and components recommended and authorized by Nicotra|Gebhardt.

## 1.2 Safety Instructions

The following Warnings, Cautions and Notes are provided for your safety and as a means of preventing damage to the product or components in the machines connected. This section lists Warnings, Cautions and Notes, which apply generally when handling the Nicotra|Gebhardt **FANCommander 200**, classified as **General, Transport & Storage, Commissioning, Operation and Repair**.

**Specific Warnings, Cautions and Notes** that apply to particular activities are listed at the beginning of the relevant chapters and are repeated or supplemented at critical points throughout these sections.

**Please read the information carefully, since it is provided for your personal safety and will also help prolong the service life of your FANCommander 200 and the equipment you connect to it.**

### General



#### Warnings

This equipment contains dangerous voltages and controls potentially dangerous rotating mechanical parts. Non-compliance with **Warnings** or failure to follow the instructions contained in this manual can result in loss of life, severe personal injury or serious damage to property.

Only suitable qualified personnel should work on this equipment, and only after becoming familiar with all safety notices, installation, operation and maintenance procedures contained in this manual. The successful and safe operation of this equipment is dependent upon its proper handling, installation, operation and maintenance.



#### Caution

Children and the general public must be prevented from accessing or approaching the equipment!

This equipment may only be used for the purpose specified by the manufacturer. Unauthorized modifications and the use of spare parts and accessories that are not sold or recommended by the manufacturer of the equipment can cause fires, electric shocks and injuries.



#### Note

Keep these operating instructions within easy reach of the equipment and make them available to all users. Whenever measuring or testing has to be performed on live equipment suitable electronic tools should be used.

Before installing and commissioning, please read these safety instructions and warnings carefully and all the warning labels attached to the equipment.

Make sure that the warning labels are kept in a legible condition and replace missing or damaged labels.

**Transport & Storage**



**Warning**  
 Correct transport, storage, erection and mounting, as well as careful operation and maintenance are essential for proper and safe operation of the equipment.



**Caution**  
 Protect the device against physical shocks and vibration during transport and storage. Also be sure to protect it against water (rainfall) and excessive temperatures.

**Commissioning**



**Warning**  
 Work on the device/system by **unqualified** personnel or failure to comply with warnings can result in severe personal injury or serious damage to material.  
  
 Only suitably qualified personnel trained in the setup, installation, commissioning and operation of the product should carry out work on the device/system.



**Caution**  
 This device is intended to be installed in accordance with the Canadian and National Electrical Code and any additional local codes.

**Operation**



**Use for intended purpose only**  
 The equipment may be used only for the application stated in the manual and only in conjunction with devices and components recommended and authorized by Nicotra|Gebhardt.



**Warning**  
 This device works with dangerous high voltages.  
  
 Some parameters may result in automatic start of connected fans after power-on the **FANCommander 200** or after programming of internal automatic control (scheduler).

## Repair

**Warning**

Repairs on equipment may only be carried out by Nicotra||Gebhardt.  
Disconnect the power supply before opening the equipment for access.

**Warning**

Lithium battery inside!  
Battery may explode when mistreated.  
Do not recharge, disassemble or dispose of in fire!

## Operating Environment

**Note**

This device is intended for pollution degree 2 environment only.  
Enclosure rating: indoor, type 1.

### 1.3 Approbation



#### European Low Voltage Directive

The FANCommander 200 complies with the requirements of the European Low Voltage Directive 2006/95/EC.

#### European EMC Directive

The FANCommander 200 complies with the European EMC Directive 2004/108/EC.

The device conforms to the following standards:

- DIN EN 55011 (Radiated and Conducted Emissions)
- DIN EN 61000-4-2 (Electrostatic Discharge)
- DIN EN 61000-4-4 (Burst Interferences)
- DIN EN 61000-6-2 (Industrial Environment)
- DIN EN 61000-6-3 (Residential, Commercial and Light Industry Environment)

#### Underwriters Laboratories



File No. E235828

The device is intended for pollution degree 2 environment.  
Enclosure rating: indoor, type 1.



## 2 Overview

### 2.1 „FANCommander 200“ Monitoring and Control Station

The **FANCommander 200** is a stand-alone monitoring and control unit for up to 200 fans. Fans can be controlled and monitored individually or by groups. The device offers easy commissioning and operating assisted by a clear menu structure and the single multi-functional control element. Additional features like an automatic day/night shift (controlled by external input or by included clock), closed-loop control capability, 3-level operator rights and non-volatile error storage downloadable to a PC make the **FANCommander 200** a smart monitoring and control solution for small fan systems.

### 2.2 Features

|                           |   |
|---------------------------|---|
| Fan control               | Single, up to 15 groups, per line, total  |
| Addressing                | Fan address 0...99 at 2 lines → 200 Fans  |
| Display                   | <ul style="list-style-type: none"> <li>• lighted LCD: 4 lines, 20 characters</li> <li>• LED to indicate error status</li> </ul>   |
| Control elements          | Multi-functional element (wheel and push button)  |
| Operation and navigation  | Menu guided   |
| Fan parameter control     | Day speed, Night speed, ON/OFF, Maximum speed, Restart delay, Wink function, Reset errors   |
| Error handling            | <ul style="list-style-type: none"> <li>• Non-volatile error storage</li> <li>• Download error storage to PC (serial interface)</li> <li>• Separate error indication of:             <ul style="list-style-type: none"> <li>- present errors</li> <li>- new (unacknowledged) errors</li> </ul> </li> <li>• Error indication by:             <ul style="list-style-type: none"> <li>- Display</li> <li>- LED</li> <li>- 2 dry contact outputs (configurable separately as High- or Low-active)</li> </ul> </li> </ul> |
| Automatic day/night shift | <ul style="list-style-type: none"> <li>• External control (24Vcd input)</li> <li>• Internal control (clock)</li> </ul>  |
| Additional features       | <ul style="list-style-type: none"> <li>• Internal clock</li> <li>• Automatic fan registration (scan function)</li> <li>• Closed-loop control function (with ERA 04-0000-4G-IG)</li> <li>• Export of all configuration parameters (serial interface)</li> <li>• User language English and German</li> </ul>  |
| Supply voltage            | <ul style="list-style-type: none"> <li>• 115/230Vac</li> </ul>  |

### 3 Installation



**Warnings**

This equipment contains dangerous voltages and controls potentially dangerous rotating mechanical parts. Non-compliance with **Warnings** or failure to follow the instructions contained in this manual can result in loss of life, severe personal injury or serious damage to property.

Only suitable qualified personnel should work on this equipment, and only after becoming familiar with all safety notices, installation, operation and maintenance procedures contained in this manual. The successful and safe operation of this equipment is dependent upon its proper handling, installation, operation and maintenance.



**Caution**

This device is intended to be installed in accordance with the Canadian and National Electrical Code and any additional local codes.

#### 3.1 Ambient Operating Conditions

**Humidity Range**

<90% not condensing

**Shock**

Do not drop the device or expose to sudden shock.

**Vibration**

Do not install the device in an area where it is likely to be exposed to constant vibration.

**Electromagnetic Radiation**

Do not install the device near sources of electromagnetic radiation.

**Atmospheric Pollution**

Do not install the device in an environment, which contains atmospheric pollutants such as dust, corrosive gases, etc.

**Water**

Take care to site the device away from potential water hazards, e.g. do not install the device beneath pipes that are subject to condensation. Avoid installing the device where excessive humidity and condensation may occur.

### 3.2 Mechanical Installation

The FANCommander 200 is intended for wall mounting. The dimensions for wall mounting can be taken from Figure 1.

| Index | Knockout            |
|-------|---------------------|
| A     | M12 - PG9 - 1/2"    |
| B     | M16 - PG11 - 1/2"   |
| C     | M20 - PG13,5 - 1/2" |

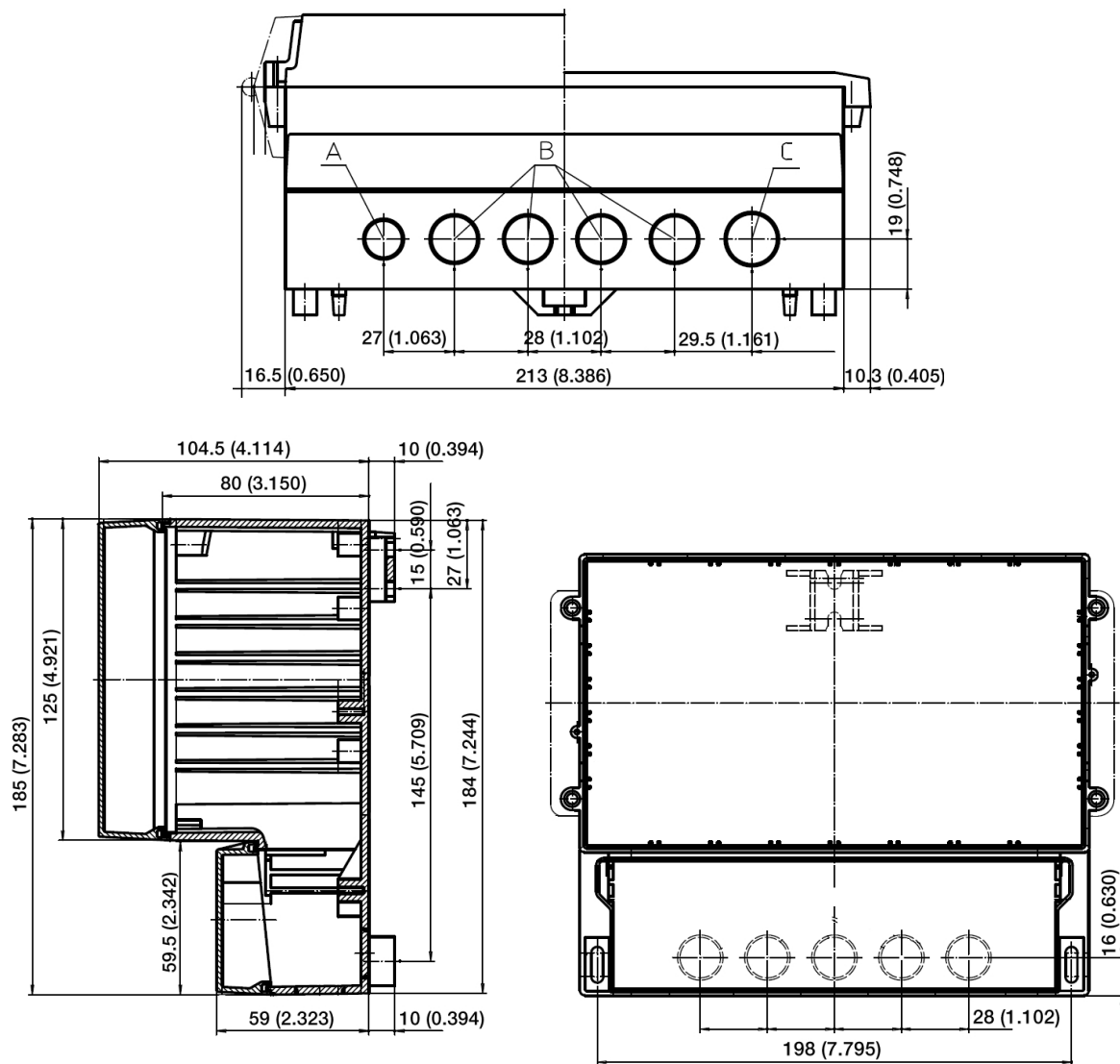


Figure 1: Mechanical Dimensions in mm (inch)



**Warning**

To prevent the housing from being damaged when removing the knockouts, the **cover of the connector panel must be closed and screwed tight.**



**Note**

In case of rigid conduit connection, the following shall be considered:  
The conduit hub is to be connected to the conduit before the hub is connected to the enclosure.

### 3.3 Electrical Installation



**Warning**  
 This device works with dangerous electrical voltages. Connection of power supply or other devices operated at high voltage is **only permitted when power is off.**  
 The device shall be wired according to the NEC (NFPA 70) requirements.



**Warning**  
 Some parameters may result in automatic start of connected fans after power-on the **FANCommander 200** or after programming of internal automatic control (scheduler).



**Caution**  
 Nonmetallic enclosure does not provide grounding between conduit connection. Use grounding bushing and jumper wires.

#### 3.3.1 Connection

The connection terminal is accessible even after removing the cover (see Figure 2). The connection of the **FANCommander 200** can be seen from Table 1.

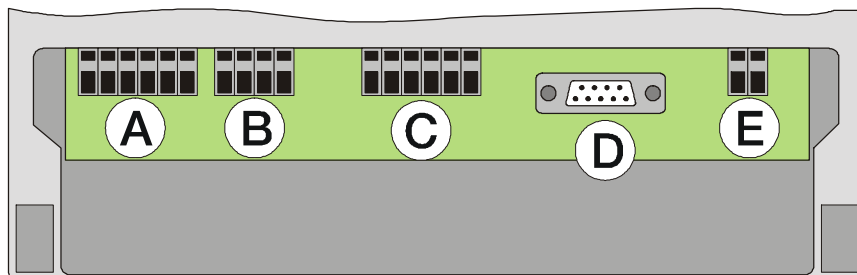
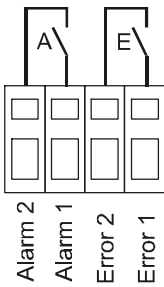
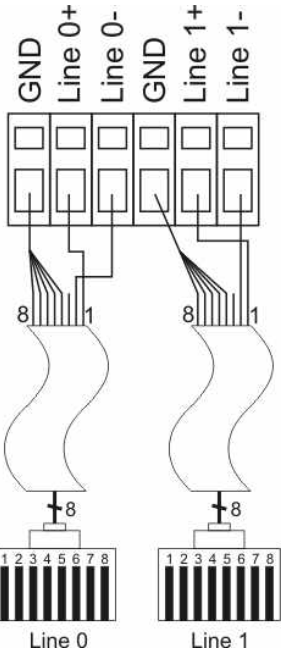
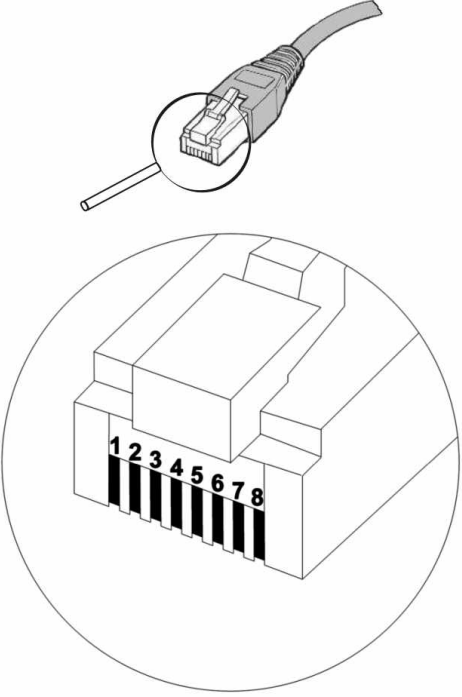


Figure 2: Connecting Terminals

| Index | Notation     | Diagram                | Description   |
|-------|--------------|------------------------|---|
| A     | power supply | <p><b>1AC 115V</b></p> | <p>The <b>FANCommander 200</b> can be operated with 2 different voltage levels:</p> <ul style="list-style-type: none"> <li>• 1AC 115V (50/60Hz)</li> <li>• 1AC 230V (50/60Hz)</li> </ul> <p>The supplied bridges have to be connected according to the mains voltage level.</p> |
|       |              | <p><b>1AC 230V</b></p> |   |

| <p><b>B</b></p> | <p>error contacts</p>      |    | <p>Any error can be sent to a higher control level device (such as FMS) providing two separate dry contacts:</p> <p>contact E triggered: “errors” (=LED ON)</p> <p>additional contact A triggered: “new (unacknowledged) errors” (=LED flashing)</p> |      |          |                                  |                              |   |        |                |               |   |        |        |       |   |          |               |                |     |        |                 |                 |
|-----------------|----------------------------|---|--|------|----------|----------------------------------|------------------------------|---|--------|----------------|---------------|---|--------|--------|-------|---|----------|---------------|----------------|-----|--------|-----------------|-----------------|
| <p><b>C</b></p> | <p>communication lines</p> | <p>The two lines driving 100 fans each can be connected to the <b>FANCommander 200</b>.</p> <p><b>Terminal assignment:</b></p> <table border="1" data-bbox="561 712 1369 913"> <thead> <tr> <th>Wire</th> <th>Function</th> <th>colour TIA 568B (mostly Germany)</th> <th>colour TIA 568A (mostly USA)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Line +</td> <td>white / orange</td> <td>white / green</td> </tr> <tr> <td>2</td> <td>Line -</td> <td>orange</td> <td>green</td> </tr> <tr> <td>3</td> <td>Not used</td> <td>white / green</td> <td>white / orange</td> </tr> <tr> <td>4-8</td> <td>Ground</td> <td>All other wires</td> <td>All other wires</td> </tr> </tbody> </table> <p>(view to the RJ45 plug from front to the contacts)</p> <div style="display: flex; justify-content: space-around;">   </div> |  | Wire | Function | colour TIA 568B (mostly Germany) | colour TIA 568A (mostly USA) | 1 | Line + | white / orange | white / green | 2 | Line - | orange | green | 3 | Not used | white / green | white / orange | 4-8 | Ground | All other wires | All other wires |
| Wire            | Function                   | colour TIA 568B (mostly Germany)  | colour TIA 568A (mostly USA)   |      |          |                                  |                              |   |        |                |               |   |        |        |       |   |          |               |                |     |        |                 |                 |
| 1               | Line +                     | white / orange  | white / green  |      |          |                                  |                              |   |        |                |               |   |        |        |       |   |          |               |                |     |        |                 |                 |
| 2               | Line -                     | orange  | green  |      |          |                                  |                              |   |        |                |               |   |        |        |       |   |          |               |                |     |        |                 |                 |
| 3               | Not used                   | white / green   | white / orange   |      |          |                                  |                              |   |        |                |               |   |        |        |       |   |          |               |                |     |        |                 |                 |
| 4-8             | Ground                     | All other wires   | All other wires  |      |          |                                  |                              |   |        |                |               |   |        |        |       |   |          |               |                |     |        |                 |                 |

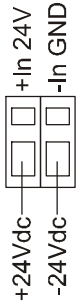
|                 |                                 |   |  |
|-----------------|---------------------------------|---|--|
| <p><b>D</b></p> | <p>PC connection</p>            |   | <p>The <b>FAN</b>Commander 200 can be connected to a PC using a 9-pole serial cable.</p> <p>With this connection the permanent error log can be downloaded and saved to a PC using a terminal program (like WINDOWS® HyperTerminal)</p>  |
| <p><b>E</b></p> | <p>external day/night shift</p> |  <p>The diagram shows a vertical 2-pin connector. The top pin is labeled '+In 24V' and the bottom pin is labeled '-In GND'. Below the connector, there are two labels: '+24Vdc' aligned with the top pin and '-24Vdc' aligned with the bottom pin.</p> | <p>The <b>FAN</b>Commander 200 provides the possibility to install an automated day/night shift (with internal or external control).</p> <p>Applying 24Vdc to this input will activate the night speed at all connected fans.</p> <p>Night speed will remain active as long as the input is supplied with 24Vdc.</p> |

Table 1: Connecting Diagrams

### 3.3.2 Building a Fan Control Network

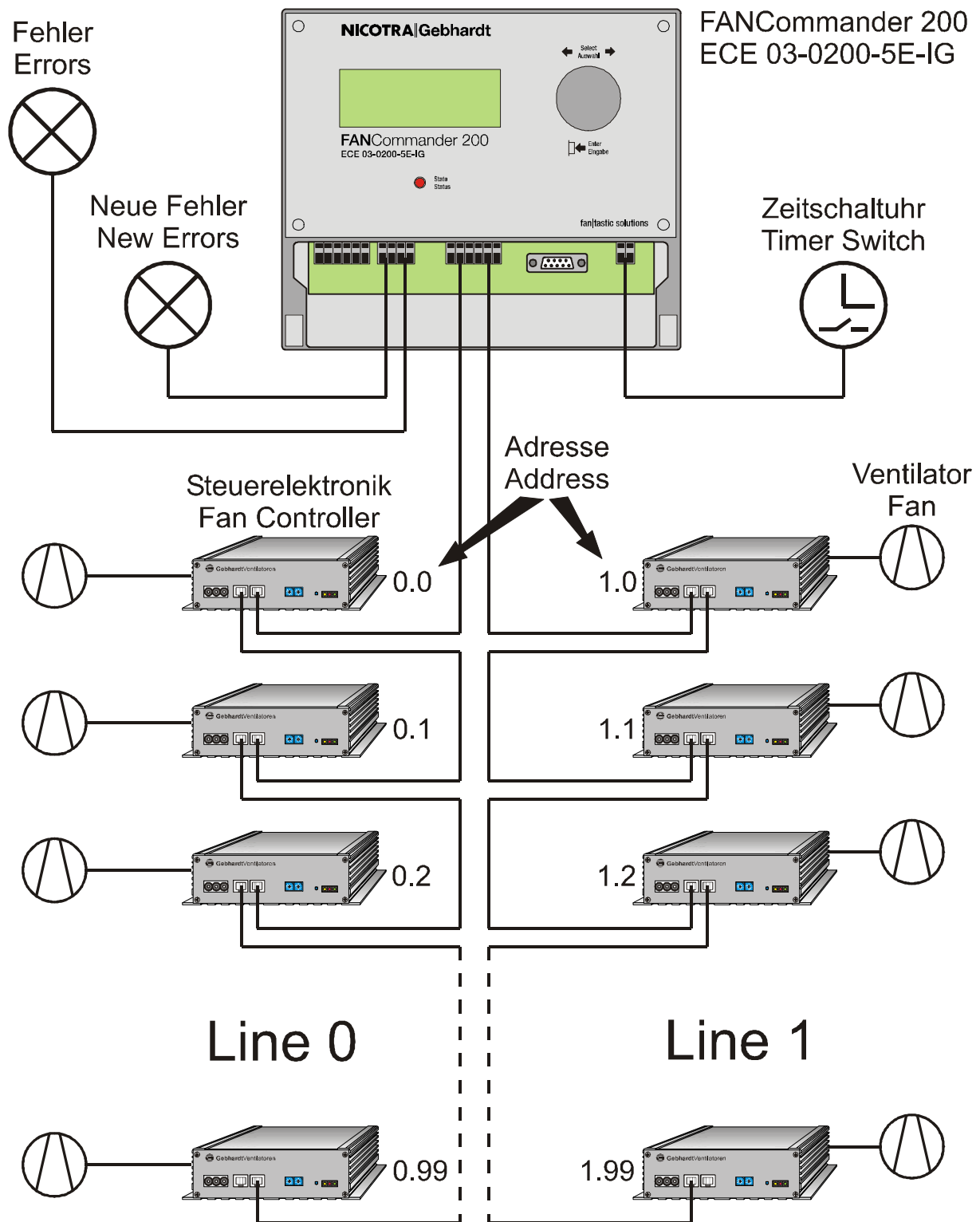


Figure 3: Connection Diagram of a Fan Network with FANCommander 200

### 3.3.3 Connecting the FANCommander 200 to a Facility Management System

The two error contacts can be used to link the alarm status information to a Facility Management System (FMS)<sup>1</sup>. Since the alarm outputs are dry contacts (normally open), the FMS needs 2 free digital inputs at a Digital Input Interface<sup>2</sup> capable to supply the contacts (for instance with 24Vdc output).

Additional, also the external Day/Night shift can be controlled by FMS using an 24Vdc digital output.

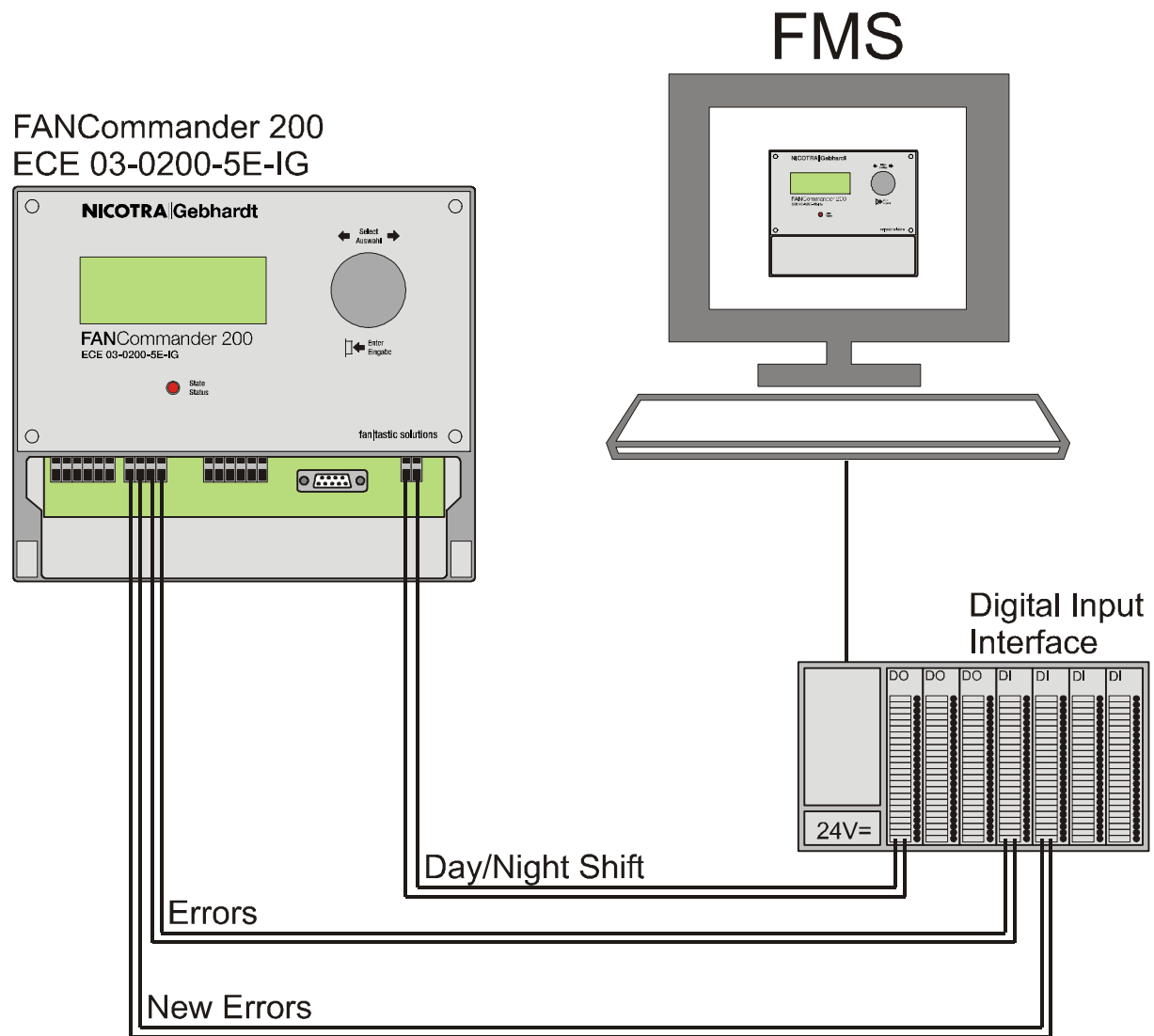


Figure 4: Connection Diagram of FANCommander 200 with FMS

<sup>1</sup> not provided by Gebhardt Ventilatoren

<sup>2</sup> not provided by Gebhardt Ventilatoren



## 4 Operation

### 4.1 General Operation

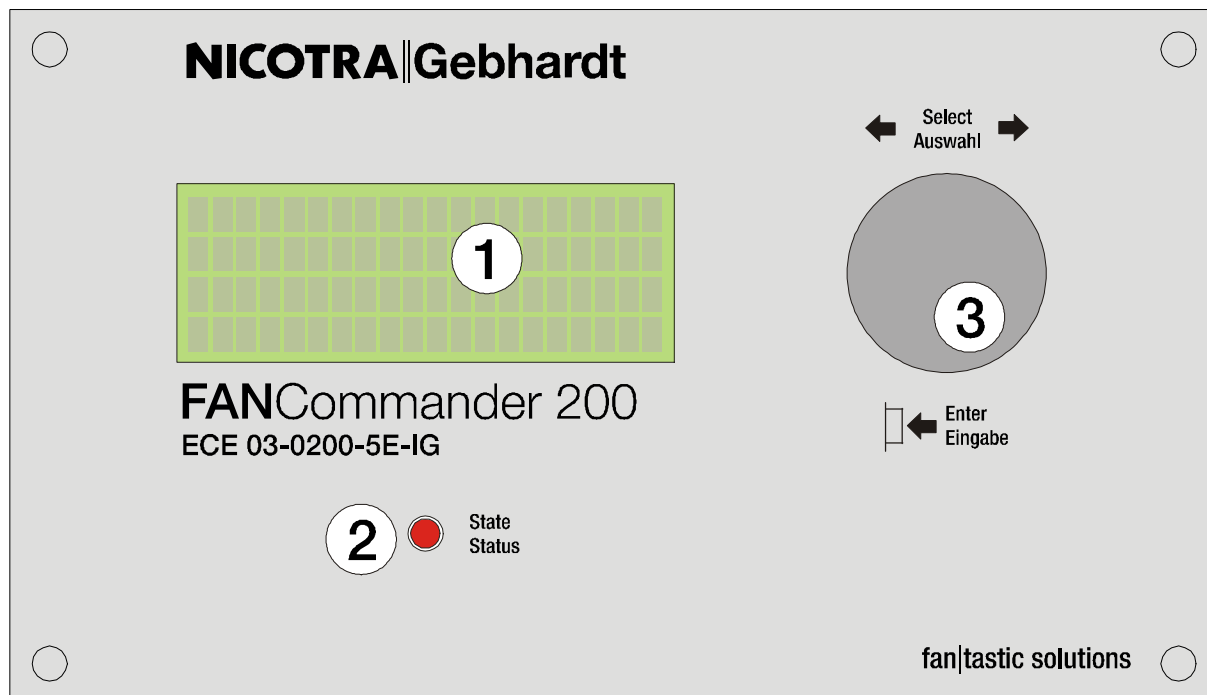


Figure 5: Front View

#### 4.1.1 Control Element

| Index | Notation                         | Description   |   |
|-------|----------------------------------|---|---|
| 3     | Multi-functional control element | The <b>FANCommander 200</b> offers the capability to be operated completely menu guided using only one single input device: |   |
|       |                                  | turn clockwise:   | <ul style="list-style-type: none"> <li>increase value</li> <li>menu down</li> <li>cursor right</li> </ul> |
|       |                                  | turn counter-clockwise:   | <ul style="list-style-type: none"> <li>decrease value</li> <li>menu up</li> <li>cursor left</li> </ul>    |
|       |                                  | push button:  | <ul style="list-style-type: none"> <li>enter</li> </ul>   |

Table 2: Functions of the Control Element

4.1.2 Display

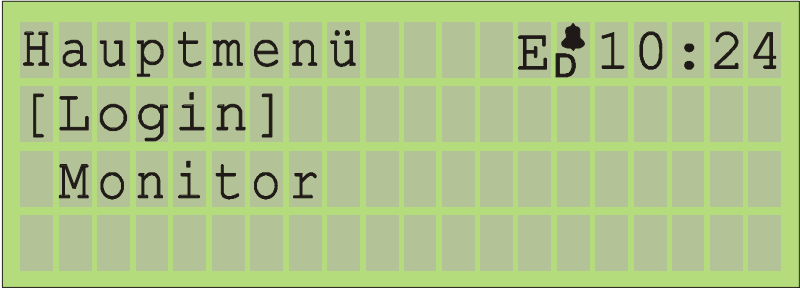
| Index         | Notation                      | Description  |         |          |               |                               |          |             |
|---------------|-------------------------------|--|---------|----------|---------------|-------------------------------|----------|-------------|
| 1             | LCD                           | <p>The 4 line, 20 character LC display is used for general operation and fan data listing.</p>  <p>line 1:</p> <ul style="list-style-type: none"> <li>• actual menu (left-justified)</li> <li>• state of day/night shift (left beside clock) <ul style="list-style-type: none"> <li>- 📌: internal control</li> <li>- ⚡: external control</li> <li>- D: day speed activated</li> <li>- N: night speed activated</li> </ul> </li> <li>• error status <ul style="list-style-type: none"> <li>- E: errors</li> <li>- E (flashing): new (unacknowledged) errors</li> <li>- L: error log damaged</li> </ul> </li> <li>• clock (right-justified)</li> </ul> <p>line 2-4:</p> <ul style="list-style-type: none"> <li>• menu options</li> <li>• data</li> </ul> |         |          |               |                               |          |             |
| 2             | error display                 | <p>Errors will be indicated with an additional LED at the device front panel:</p> <table border="1" data-bbox="560 1442 1396 1550"> <tr> <td data-bbox="560 1442 778 1476">LED on:</td> <td data-bbox="778 1442 1396 1476">„errors“</td> </tr> <tr> <td data-bbox="560 1476 778 1509">LED flashing:</td> <td data-bbox="778 1476 1396 1509">„new (unacknowledged) errors“</td> </tr> <tr> <td data-bbox="560 1509 778 1550">LED off:</td> <td data-bbox="778 1509 1396 1550">„no errors“</td> </tr> </table>   | LED on: | „errors“ | LED flashing: | „new (unacknowledged) errors“ | LED off: | „no errors“ |
| LED on:       | „errors“                      |  |         |          |               |                               |          |             |
| LED flashing: | „new (unacknowledged) errors“ |  |         |          |               |                               |          |             |
| LED off:      | „no errors“                   |  |         |          |               |                               |          |             |

Table 3: Display Elements

## 4.2 Addressing of Fans

Each fan can be identified at the network with an unique address. The fan address will be partly defined through the connection to the network hardware. The address combines as follows:

➤ **line-address.fan-address**

The address range is shown in Table 4:

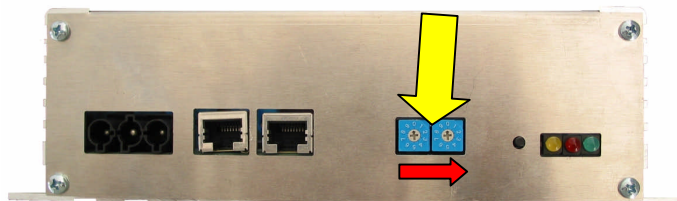
|      | Minimum | Maximum |
|------|---------|---------|
| line | 0       | 1       |
| fan  | 0       | 99      |

**Table 4: Address Range of the FANCommander 200**



**Note**  
 Example: the lowest possible address is “0.0”, the highest possible address will be “1.99”.

The fan address can be adjusted between 0 and 99 at the fan controller’s front panel using the two turn switches (see Figure 6).



**Figure 6: Address Switches of the Fan Controllers**



**Caution**  
 Addresses must not be given double at one line. Otherwise address conflicts with communication errors or network instability may occur.

### 4.3 Parameter Structure of the Fan Controller

| Parameter      | Minimum | Maximum | Unit | Remarks   |
|----------------|---------|---------|------|---|
| set speed      | 0       | 100     | %    | 0 = STOP  |
| actual speed   | 0       | 100     | %    | 0 = STOP  |
| maximum speed  | 0       | 2000    | rpm  | 0 = STOP  |
| speed offset   | -2000   | 2000    | rpm  |   |
| restart delay  | 1       | 255     | sec  | time between power on and motor startup<br><br>0 = no automatic restart   |
| blink function | 0       | 1       |      | 0 = blink function ON<br>1 = blink function OFF<br><br>(red and green LED of the fan controller flashing alternating, after 10min automatically set to OFF) |
| error code     | 0       | 7       |      | error codes:<br>see table 6<br><br>Writing to the error byte will reset the error (done by the <b>FANCommander 200</b> at the command „Reset Errors“)       |

**Table 5: Fan Parameter List**

| Error codes            | 0 - no Error | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------------|--------------|---|---|---|---|---|---|---|
| DC-link voltage error  |              | X |   | X |   | X |   | X |
| motor error            |              |   | X | X |   |   | X | X |
| speed controller error |              |   |   |   | X | X | X |   |

**Table 6: Error codes**

### 4.4 Menu Structure

The following overview shows the complete menu structure.

**4.4.1 Monitor**

| Main Menu | Submenu 1  | Submenu 2   | Submenu 3 | Submenu 4 | Remark           |
|-----------|--|---|-----------|-----------|------------------|
| Login     | Monitor  |   |           |           | without password |
|           | Operator   | (enter code)  |           |           |                  |
|           | Administrator  | (enter code)  |           |           |                  |
| Monitor   | Monitor 1<br>(list of registered fans with status information) | Monitor 2<br>(list of all parameters of the chosen fan) |           |           |                  |

**4.4.2 Operator**

| Main Menu     | Submenu 1                   | Submenu 2  | Submenu 3  | Submenu 4   | Remark  |  |
|---------------|-----------------------------|--|--|---|---|--|
| Control       | Single                      | Control Single<br>(list of registered fans)                              | Day Speed  | enter data<br>• enter new value<br>• cancel/confirm | Range: 0...100%                                     |  |
|               |                             |  | Night Speed  |   | Range: 0...100%                                     |  |
|               |                             |  | Start  |   |   |  |
|               |                             |  | Stop   |   |   |  |
|               |                             |  | Reset Errors   |   |   |  |
|               |                             | Blink ON   |  |   |   |  |
|               | Group Control               | Control Group<br>(list of defined groups)                                | like „Control Single“  |   | like „Control Single“                               |  |
|               | Line 1                      |  |  |   |   |  |
|               | Line 2                      |  |  |   |   |  |
|               | All                         |  |  |   |   |  |
| Controller    | Monitor                     | Monitor 1<br>(list of registered controllers with set value information) | Monitor 2<br>(list of all parameters of the chosen controller) |   |   |  |
|               | Control                     | Control<br>(list of registered controllers)                              | Day Set Value  | enter data<br>• enter new value<br>• cancel/confirm |   |  |
|               |                             |  | Night Set Value  |   |   |  |
|               |                             |  | Start  |   |   |  |
|               |                             |  | Stop   |   |   |  |
|               | Parameters                  | Parameters<br>(list of registered controllers)                           |  | K <sub>p</sub>                                      | enter data<br>• enter new value<br>• cancel/confirm |  |
|               |                             |  |  | K <sub>i</sub>                                      |   |  |
|               |                             |  |  | T <sub>a</sub>                                      |   |  |
|               |                             |  |  | Precontrol Value                                    |   |  |
|               |                             |  |  | Max Value   |   |  |
| Unit          |                             |  |  |   |   |  |
| Mode          |                             |  |  | ■ Controller<br>□ Group Enable                      |   | <Enter> enables (■) or disables (□) the function |
| Enable Signal | > Active Low<br>Active High | <Enter> to choose function   |  |   |   |  |

|               |  |  |  |  |   |
|---------------|--|--|--|--|---|
| Error handler | Quit All Errors                                |  |  |  | <Enter> acknowledges all errors in list                                       |
|               | Reset All Errors                               |  |  |  | <Enter> sends command "reset" to all fans with error                          |
|               | Export Errors                                  | Delete error list?<br>(deletes the non-volatile error storage) |  |  | sends all error messages from non-volatile error storage via serial interface |
|               | (list of addresses with unacknowledged errors) |  |  |  | <Enter> acknowledges single error messages                                    |

4.4.3 Administrator

|          |   |  |   |  |   |  |
|----------|---|--|---|--|---|--|
| Database | Register Devices                                      | Auto Scan  |   |  | scans the complete network for present fans                                     |  |
|          |   | <b>Delete All Nodes</b>                          | Delete all nodes?<br>[No] Yes   |  | sets all fans to unregistered   |  |
|          |   | (single registration from list of all addresses) |   |  | <Enter> registers (■) or deletes (□) one fan                                    |  |
|          | Define Groups   | Define Groups<br>(list of registered fans)       | enter data <ul style="list-style-type: none"> <li>enter group</li> <li>cancel/confirm</li> </ul>                            |  |   | Range: 1...15<br>0 = no Group                      |
|          |   | Add Controller                                   | Auto Scan   |  |   | scans the complete network for present controllers |
|          | Add Controller  |  | enter data <ul style="list-style-type: none"> <li>enter new address</li> <li>cancel/confirm</li> </ul>                      |  |   |  |
|          | Delete All Contr.                                     |  | Delete all controllers?<br>[No] Yes   |  | sets all controllers to unregistered  |  |
|          | (single de-registration from list of all controllers) |  | Delete selected controller?<br>[No] Yes   |  | <Enter> deletes (□) the selected controller from list                           |  |
|          | Assign Controller                                     | Assign Controller<br>(list of available groups)  | enter data <ul style="list-style-type: none"> <li>enter new controller address to assign</li> <li>cancel/confirm</li> </ul> |  |   | assigns a controller to a group                    |
|          | Export Database                                       |  |   |  | sends all configuration parameters of fans and controllers via serial interface |  |



| Main Menu   | Submenu 1   | Submenu 2  | Submenu 3   | Submenu 4  | Remark   |
|-------------|---|--|---|--|--|
| Parameters  | Single  | Parameters Single<br>(list of registered fans)                     | Maximum Speed<br>Restart Delay                                | enter data<br>• enter new value<br>• cancel/confirm                          | Range: 0...2000rpm<br>Range: 1...255sec  |
|             | Group   | Parameters Group<br>(list of defined groups)                       | like „Parameters Single“                                      |  | like „Parameters Single“   |
|             | Line 1  |  |   |  |  |
|             | Line 2  |  |   |  |  |
|             | All   |  |   |  |  |
| Options     | Day/Night   | <input checked="" type="checkbox"/> OFF<br>(only day speed active) |   | This will set day speed<br>(night speed). Continue?<br>(double confirmation) | When changing the<br>Day/Night shift mode it could<br>happen to send new speed<br>commands. This will be<br>requested by a double<br>confirmation. |
|             |   | <input type="checkbox"/> External (Input)                          |   |  |  |
|             |   | <input type="checkbox"/> Internal (Clock)                          | Day/Night Start Time<br>• enter new value<br>• cancel/confirm |  |  |
|             | Change Code   | Operator   | Change Code<br>old: ****<br>new: ****<br>Confirm: ****        |  | Information about success  |
|             |   | Administrator  | like "Operator"   |  |  |
|             | Language (Sprache)                                  | > English (Englisch)   |   |  | <Enter> to choose user<br>language   |
|             |   | German (Deutsch)   |   |  |  |
|             | Error Relay Mode                                    | New Errors (Alarm)   | > Active Low<br>Active High                                   |  | <Enter> to choose function   |
|             |   | Errors Present   | like „New Errors“   |  |  |
|             | Set Clock   | enter time<br>• enter new value<br>• cancel/confirm                |   |  |  |
| Auto Logout | enter data<br>• enter new value<br>• cancel/confirm |  |   | Range: 0...60min   |  |

## 5 Working with the FANCommander 200



### How to read the following instructions:

- menu items are indicated with a right angle bracket like this: >Monitor
- alternative menu options are given in square brackets like this: [>submenu 1, >submenu 2]

### 5.1 First Commissioning

|                                     |  |
|-------------------------------------|--|
| <b>Device status after power on</b> | <ul style="list-style-type: none"> <li>• device performs system initialization (app. 3sec)</li> <li>• after this the device is at the menu item &gt;Monitor</li> </ul>   |
| <b>Action</b>                       | <ul style="list-style-type: none"> <li>• &gt;Exit</li> <li>• log in as &gt;Administrator (initial code: 0000)</li> <li>• set user language</li> <li>• setup date and time</li> <li>• change code</li> <li>• set auto logout time (0..60min)</li> </ul> |

### 5.2 Logging in

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• device powered up</li> </ul>  |
| <b>Menu choice</b> | >Login [>Monitor, >Operator, >Administrator]   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• input correct code digit by digit</li> <li>• initial settings for &gt;Operator and &gt;Administrator: 0000</li> </ul> |

### 5.3 Setup User Language

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> </ul>                          |
| <b>Menu choice</b> | >Options >Language [>English (Englisch), >German (Deutsch)]   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose language with cursor</li> <li>• &lt;Enter&gt;</li> </ul>  |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• The change of language will be performed immediately.</li> </ul> |

### 5.4 Setup Date and Time

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> </ul>   |
| <b>Menu choice</b> | >Options >Set Date/Clock >Set  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• adjust day, month, year, hour, minute, seconds &gt;OK</li> <li>• <b>There is no automatic change to summer time!</b></li> </ul> |

## 5.5 Change Codes

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> </ul>   |
| <b>Menu choice</b> | >Options >Change Code  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose &gt;Operator or &gt;Administrator</li> <li>• enter old code</li> <li>• enter new code</li> <li>• confirm new code</li> </ul> |

## 5.6 Activate Auto-Logout Function

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> </ul>            |
| <b>Menu choice</b> | >Options >Auto Logout   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• enter new value (range 0..60min) &gt;OK</li> </ul> |

## 5.7 Register and Delete Fans

### Register/delete by hand:

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• fans do not have to be connected</li> </ul>   |
| <b>Menu choice</b> | >Database >Register Devices  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose Address from list with cursor</li> <li>• repeated actuating the &gt;Enter&lt; button will register (■) or remove (□) the selected fan</li> <li>• proceed in the same way with other fan addresses</li> </ul> |

### Register/delete automatically (scan function):

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• Fans have to be connected properly and switched on</li> <li>• fans have to be set up with the correct addresses</li> </ul> |
| <b>Menu choice</b> | >Database >Register Devices >Auto Scan  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• The <b>FAN</b>Commander 200 scans the complete address range for connected fans</li> <li>• all found fans will be automatically registered</li> </ul>              |

### Delete all nodes:

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• fans do not have to be connected</li> </ul> |
| <b>Menu choice</b> | >Database >Register Devices >Delete All Nodes  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• all registered fans will be set to unregistered in database</li> </ul>              |

## 5.8 Display Actual Fan Data (Monitor)

### Table view (Monitor 1):

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Monitor</li> <li>• at least 1 fan registered</li> </ul> |
| <b>Menu choice</b> | >Monitor  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• move the cursor though table</li> </ul>                                |

### Show details of selected fan (Monitor 2):

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Monitor</li> <li>• at least 1 fan registered</li> </ul>   |
| <b>Menu choice</b> | >Monitor  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose one fan with cursor</li> <li>• repeated actuating the &gt;Enter&lt; button changes between &gt;Monitor 1 and &gt;Monitor 2</li> <li>• move the cursor though &gt;Monitor 2</li> </ul> |



**Note:**

The monitor is also available for the optional closed-loop controller modules with the same functionality under menu item: >Controller >Monitor

## 5.9 Change Fan Parameters

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• at least 1 fan registered</li> </ul>  |
| <b>Menu choice</b> | >Parameters [>Single, >Group, >Line 1, >Line 2, >All]  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose single fan or group</li> <li>• choose parameter [&gt;Maximum Speed, &gt;Speed Offset, &gt;Restart Delay]</li> <li>• enter new value</li> <li>• &gt;OK</li> </ul> |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• new values will be sent to all connected fans of the chosen group</li> </ul>  |

## 5.10 Control Fans

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Operator</li> <li>• at least 1 fan registered</li> </ul>   |
| <b>Menu choice</b> | >Control [>Single, >Group, >Line 1, >Line 2, >All]   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose single fan or group</li> <li>• choose value or command [&gt;Day Speed, &gt;Night Speed, &gt;Start, &gt;Stop, &gt;Reset Errors, &gt;Blink ON]</li> <li>• enter new value</li> <li>• &gt;OK</li> </ul> |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• new values will be sent to all connected fans of the chosen group</li> </ul>  |



**Important Note:**  
 Enter of fan speed has to be done in „% of Maximum Speed“!  
 Because of this reason the Maximum Speed of the fan has to be set at menu >Parameters **before** setting of the fan speed!


With this feature it is possible to run different fan types (with different maximum speeds) with the same % set point.

The set speed of the fans is obtained from the equation:

$$SetSpeed(rpm) = SetValue(\%) \times MaximumSpeed(rpm) + SpeedOffset(rpm)$$


**Note:**  
 When the fan is member of a group being controlled by a closed-loop controller, hand control of this fan is **not possible**.

### 5.11 Define Groups

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• several fans registered</li> </ul>   |
| <b>Menu choice</b> | >Database >Define Groups  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose fan from address list</li> <li>• &gt;OK</li> <li>• enter new group number [1..15, 0=no group]</li> <li>• &gt;OK</li> </ul>  |
| <b>Reaction</b>    |  <ul style="list-style-type: none"> <li>• the new group number will be indicated behind address</li> <li>• now fans can be controlled parameterized by groups</li> <li>• <b>removing a fan will automatically delete its group assignment</b></li> </ul> |

### 5.12 Export Database

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• at least one fan registered</li> <li>• <b>FANCommander 200</b> is connected to a PC with serial cable</li> <li>• running terminal program at PC with an open connection to the <b>FANCommander 200</b> (transmission data rate see chapter 7.8)</li> </ul> |
| <b>Menu choice</b> | >Database >Export Database  |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• error log will be transmitted (this may take a few seconds)</li> <li>• Data is formatted as table, separated with Semicolons</li> <li>• After saving the transmitted data as text file the file can be opened for instance with Microsoft® Excel®</li> </ul>                                       |

### 5.13 Error Handling

#### Display and acknowledge new error messages:

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Operator</li> <li>• at least 1 fan registered</li> <li>• new errors happened (LED flashing)</li> </ul>  |
| <b>Menu choice</b> | >Error Handler [>Quit All Errors, >Fan address]   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• new error messages will be attached to the list</li> <li>• the error messages can be acknowledged one by one from the list</li> <li>• choosing &gt;Quit All Errors all messages can be acknowledged at once</li> </ul>   |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• error messages will be deleted from list</li> <li>• after acknowledge of all error messages the LED will stop flashing (if errors are still actual) turn OFF (if there are no more errors).</li> <li>• the corresponding relays will change their state</li> </ul> |

#### Export error log:

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Operator</li> <li>• Error log not empty</li> <li>• <b>FANCommander 200</b> is connected to a PC with serial cable</li> <li>• running terminal program at PC with an open connection to the <b>FANCommander 200</b> (transmission data rate see chapter 7.8)</li> </ul> |
| <b>Menu choice</b> | >Error Handler >Export   |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• error log will be transmitted (this may take a few seconds)</li> <li>• after download the user will be requested to delete the error log</li> <li>• &gt;Yes will empty the error log at the non-volatile memory (this may also take a few seconds)</li> </ul>                         |

#### Reset all errors:

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Operator</li> <li>• some fans have still errors which need to be reset by user (motor error, speed controller error)</li> </ul> |
| <b>Menu choice</b> | >Error Handler >Reset All Errors  |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• the <b>FANCommander 200</b> tries to reset all errors within the complete network</li> </ul>   |



## 5.14 Configure Error Relays



|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> </ul>   |
| <b>Menu choice</b> | >Options >Error Relay Mode, [>New Errors (Alarm), >Errors Present] [>Active Low, >Active High]   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose relay function according to the requirements of application</li> <li>• relay mode can be set separately for both error relays</li> </ul> |

### 5.15 Automatic Day/Night Shift


The FANCommander 200 provides automatically day/night shift with two control possibilities:

- external control (digital 24Vdc input)
- internal control (internal clock)

#### External control:

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> </ul>   |
| <b>Menu choice</b> | >Options >Day/Night > <input type="checkbox"/> External (Input)  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose &gt;<input type="checkbox"/> External (Input) and activate it pressing &gt;Enter&gt; button</li> <li>• apply 24Vdc at the digital input (connector  see chapter 0) to activate night speed at all connected and registered fans</li> </ul>  |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• &gt;External will be marked with a full square (■)</li> <li>• night speed remains active as long as the input is supplied with 24Vdc</li> <li>• removing 24Vdc will set all connected and registered fans to day speed</li> <li>• <b>Night speed should be programmed for each fan. Otherwise some fans could be stopped when activating the input.</b></li> </ul>  |

#### Internal control:

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> </ul>   |
| <b>Menu choice</b> | >Options >Day/Night > <input type="checkbox"/> Internal (Clock)  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose &gt;<input type="checkbox"/> Internal (Clock) and activate it pressing &gt;Enter&gt; button</li> <li>• at the next dialog the start times for day and night can be set</li> </ul>  |
| <b>Reaction</b>    | <ul style="list-style-type: none"> <li>• &gt;Internal (Clock) will be marked with a full square (■)</li> <li>• the FANCommander 200 will send the programmed speed set values to all connected and registered fans</li> <li>• <b>Night speed should be programmed for each fan. Otherwise some fans could be stopped when the night speed will be activated by the scheduler.</b></li> </ul>  |

## 5.16 Assign and Configure Closed-Loop Controllers



**Note:**

The possibility to build control loops is an optional feature of the **FANCommander 200**. This function is only available in connection with the closed-loop control module ERA 04-0000-4G-IG.

**For detailed description of the controller module please refer to the ERA 04-0000-4G-IG manual.**

**Register controllers by hand:**

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• fans do not have to be connected</li> </ul>  |
| <b>Menu choice</b> | >Database >Add Controller >Add Controller   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose controller address (formatted Line. Address)</li> <li>• &gt;OK</li> <li>• proceed in the same way with other controllers</li> </ul> |

**Register controllers automatically (scan function):**

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• controller has to be connected properly and switched on</li> <li>• controller has to be set up with the correct addresses</li> </ul> |
| <b>Menu choice</b> | >Database >Add Controller >Auto Scan  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• The <b>FANCommander 200</b> scans the complete address range for connected controllers</li> <li>• all found controller modules will be automatically registered</li> </ul>   |

**Delete all nodes:**

|                    |   |
|--------------------|---|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• controllers do not have to be connected</li> </ul> |
| <b>Menu choice</b> | >Database >Add Controller >Delete All Contr.  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• double confirm to delete with [&gt;No, &gt;Yes]</li> </ul>                                 |

**Assign groups with controllers:**

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Administrator</li> <li>• at least one group defined</li> </ul>                                   |
| <b>Menu choice</b> | >Database >Assign Controller   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose group</li> <li>• &gt;OK</li> <li>• choose controller address to be assigned</li> <li>• &gt;OK</li> </ul> |

**Set controller parameters:**

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Operator</li> <li>• at least one controller module registered</li> </ul>   |
| <b>Menu choice</b> | >Controller >Parameters [>K <sub>p</sub> , >K <sub>i</sub> , >T <sub>a</sub> , >Precontrol Value, >Max Value, >Unit, >Mode, >Enable Signal]  |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose controller address to be parameterized</li> <li>• &gt;OK</li> <li>• choose parameter</li> <li>• &gt;OK</li> <li>• set new value</li> <li>• &gt;OK</li> </ul> |



**Note:**  
 The functions „Controller“ and „Group Enable“ can be enabled separately in menu item >Mode.  
 With this it is possible to configure the controller module only as enable input for the assigned group.

**Operate the controller:**

|                    |  |
|--------------------|--|
| <b>Conditions</b>  | <ul style="list-style-type: none"> <li>• user level &gt;Operator</li> <li>• at least one controller module registered</li> <li>• controller assigned with a group</li> </ul>   |
| <b>Menu choice</b> | >Controller >Control [>Day Set Value, >Night Set Value, >Start, >Stop]   |
| <b>Action</b>      | <ul style="list-style-type: none"> <li>• choose controller address to be operated</li> <li>• &gt;OK</li> <li>• choose parameter</li> <li>• &gt;OK</li> <li>• set new value in the chosen unit</li> <li>• &gt;OK</li> </ul> |



**Note:**  
 The closed-loop controller module works internally only with % values. The conversion into real values with unit is done inside the **FANCommander 200**.  
 Controller set values have to be entered using the chosen unit within the range of 0 to „Max Value“ (as defined before within menu >Parameters)  
 Measured values and set value will be displayed in %:  

- Measure value in % of maximum measure value (10Vdc)
- Set value in % of maximum speed of the fan

## 6 Troubleshooting

| Problem   | Possible Reason   | Measures   |
|---|---|--|
| no display at LCD   | <ul style="list-style-type: none"> <li>no power supply</li> </ul>   | <ul style="list-style-type: none"> <li>check supply voltage</li> </ul>   |
| registered fans do not communicate with the <b>FANCommander 200</b>     | <ul style="list-style-type: none"> <li>these fans are not connected to the network</li> <li>these fans have no power supply</li> <li>address conflict</li> </ul>  | <ul style="list-style-type: none"> <li>check fans to be connected correctly and ready to operate</li> <li>check addressing of fans</li> <li>check for double addressing at one line</li> </ul>                               |
| the <b>FANCommander 200</b> can not find fans during Auto Scan          | <ul style="list-style-type: none"> <li>no fan connected</li> <li>network cable broken</li> <li>fans have no power supply</li> <li>address conflict</li> </ul>   | <ul style="list-style-type: none"> <li>check fans to be connected correctly and ready to operate</li> <li>check addressing of fans</li> <li>check for double addressing at one line</li> </ul>                               |
| user login fails  | <ul style="list-style-type: none"> <li>wrong code</li> <li>forgotten code</li> </ul>  | <ul style="list-style-type: none"> <li>as Operator: please request the Administrator of the <b>FANCommander 200</b></li> <li>as Administrator: use the general code supplied with the device and delete all codes</li> </ul> |
| new errors will not be displayed at the error list at >Error Handler    | <ul style="list-style-type: none"> <li>non-volatile error memory has been destroyed (possibly when switching off the device during write access)</li> <li>this error will be displayed with „L“ at the first line of the display</li> </ul> | <ul style="list-style-type: none"> <li>error log memory has to be deleted</li> <li>this will also newly format the memory</li> <li>before the log memory can be downloaded to a PC terminal program</li> </ul>               |
| LED flashing, even though there is no new error at the list             |   |  |
| flashing LED (new errors) is not able to be reset with >Quit All Errors |   |  |
| external day/night shift doesn't function                               | <ul style="list-style-type: none"> <li>24Vdc has wrong polarity</li> </ul>  | <ul style="list-style-type: none"> <li>check polarity</li> </ul>   |
| internal day/night shift was performed at wrong time                    | <ul style="list-style-type: none"> <li>internal clock has wrong time setting</li> </ul>   | <ul style="list-style-type: none"> <li>check internal clock for correct time and date setting</li> </ul>   |

## 7 Technical Data

### 7.1 Power Supply

|                 |                |
|-----------------|----------------|
| Nominal voltage | 1AC 115/230V   |
| Nominal current | 1AC 0,12/0,06A |
| Frequency       | 50/60Hz        |

### 7.2 Connecting Terminals

|                    |   |   |
|--------------------|---|---|
| Type               | Cage Clamp                                |   |
| Wire cross section | power supply and error contact connectors | copper 0,75-2,5mm <sup>2</sup> (AWG 18-14)<br>for UL application: copper AWG 14 |
|                    | all other connectors                      | copper 0,08-2,5mm <sup>2</sup> (AWG 28-14)                                      |
| Strip length       | 5-6mm                                     |   |

### 7.3 Casing

|  |   |
|--|---|
| Type                                   | wall mount with lid   |
| Dimensions (LxBxH)                     | 185(7.283) x 213(8.386) x 105(4.134) mm(inch)                               |
| Knockouts                              | 1xM12(PG9), 4xM16(PG11), 1xM20(PG13,5)<br>or 4x 1/2"                        |
| Material                               | Base: Lexan 500R, UL 94 V-0 (E45329)<br>Lid: Lexan 940A, UL 94 V-2 (E45329) |
| Environmental protection class         | IP 65 (with closed lid)   |
| Electrical protection class            | 2 (isolated, no earth connection)   |
| Enclosure rating (for UL applications) | indoor, type 1  |

### 7.4 Ambient Operating Conditions

|                       |                        |
|-----------------------|------------------------|
| Operating temperature | 0..40°C (32..104°F)    |
| Storage temperature   | -20..70°C (-4..158°F)  |
| Relative humidity     | 0..90%, non condensing |

### 7.5 Fan Network

|  |                              |
|--|------------------------------|
| Transceiver                                | RS485                        |
| Maximum nodes per line                     | 100                          |
| Maximum line length                        | 400m                         |
| Data rate                                  | 9.6kbps                      |
| Recommended cable                          | Cat. 5 (shielded)            |
| Connector to fan controller                | Western plug (RJ45)          |
| Isolating voltage against internal circuit | 2,5kV (over voltage class 2) |

### 7.6 Error Outputs

|  |                              |
|--|------------------------------|
| Contact type                               | single normally open         |
| Nominal current                            | 3A                           |
| Nominal voltage                            | 250Vac                       |
| maximum breaking capability                | 750VA                        |
| minimum load                               | 5V/1mA                       |
| Isolating voltage against internal circuit | 2,5kV (over voltage class 2) |

### 7.7 Digital Input (Day/Night Shift)

|  |                              |
|--|------------------------------|
| Nominal Voltage                            | 24Vdc                        |
| minimum current source capability          | 10mA                         |
| Isolating voltage against internal circuit | 2,5kV (over voltage class 2) |

### 7.8 Serial Interface (RS232)

|             |                                    |
|-------------|------------------------------------|
| Connection  | 9-pole SUB-D (female)              |
| Cable       | 9-pole serial cable (female/male)  |
| Data rate   | 115.2kbps                          |
| Data format | 8 data bits, 1 stop bit, no parity |

## 8 EC- Declaration of Conformity

### EG-Konformitätserklärung

zur  
**EG-Niederspannungsrichtlinie**  
**EG- Richtlinie Elektromagnetische**  
**Verträglichkeit**

Hiermit erklären wir, dass das nachfolgend bezeichnete Gerät aufgrund seiner Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der unten angeführten EG-Richtlinien entspricht.

Bezeichnung: **FANCommander 200**  
 Gerätetyp: **ECE 03-0200-5E-IG**  
 Baujahr/Typenbezeichnung:  
**siehe Typenschild**

Einschlägige EG-Richtlinien:  
**EG-Niederspannungsrichtlinie**  
**(2006/95/EG)**  
**EG- Richtlinie Elektromagnetische**  
**Verträglichkeit (2004/108/EG)**

Angewandte, harmonisierte Normen, insbesondere:  
**EN 55011:200-05,**  
**EN 61000-4-2 VDE 0847 / 4-2,**  
**EN 61000-4-4 VDE 0847 / 4-4,**  
**EN 61000-6-3,**  
**EN 61000-6-2**

Datum / Hersteller - Unterschrift:

Geschäftsbereichsleiter  
 01.10.2006



Technischer Leiter Geschäftsbereich  
 01.10.2006



Die vollständige Liste der angewandten Normen und technischen Spezifikationen siehe Herstellerdokumentationen.

### EC-declaration of conformity

to  
**EC-Low Voltage Directive**  
**EC- Directive of Electromagnetic**  
**Compatibility**

Herewith we declare that the device designated below, on the basis of its design and construction in the form brought onto the market by us is in accordance with the relevant safety and health requirements of the EC Council Directives as mentioned below.

Designation: **FANCommander 200**  
 Type of device: **ECE 03-0200-5E-IG**  
 Year of production/Type:  
**see device label**

Relevant EC- Council Directive:  
**EC-Low Voltage Directive (2006/95/EC)**  
**EC- Directive of Electromagnetic**  
**Compatibility (2004/108/EC)**

Applied harmonized standards, in particular:  
**EN 55011:200-05,**  
**EN 61000-4-2 VDE 0847 / 4-2,**  
**EN 61000-4-4 VDE 0847 / 4-4,**  
**EN 61000-6-3,**  
**EN 61000-6-2**

Date / Signature of manufacturer:

Department Manager  
 01.10.2006



Technical Director Department  
 01.10.2006



For the complete List of applied standards and technical specifications see the manufacturer's documentation.