# 4PP065.0571-X74F

## 1 Order data

| Model number | Short description | Figure |
|---|---|---|
| | **Power Panel 65** |  |
| 4PP065.0571-X74F | Power Panel PP65, 5.7" QVGA color TFT display with touch screen (resistive), 10 function keys, 128 MB DRAM, 232 kB SRAM, CompactFlash slot, 1x ETH 10/100, 1x X2X Link, 2x USB, IP65 protection (front), order application memory separately Order 0TB103 and 0TB704 terminal blocks separately | |
| | **Required accessories** | |
| | **Accessories** | |
| 0TB103.9 | Connector 24 VDC - 3-pin, female - Screw clamp terminal block 3.31 mm² | |
| 0TB103.91 | Connector 24 VDC - 3-pin, female - Cage clamp terminal block 3.31 mm² | |
| | **CompactFlash cards** | |
| 0CFCRD.0512E.01 | CompactFlash 512 MB extended temp. | |
| 0CFCRD.2048E.01 | CompactFlash 2048 MB extended temp. | |
| 5CFCRD.0512-06 | CompactFlash 512 MB B&R (SLC) | |
| 5CFCRD.1024-06 | CompactFlash 1 GB B&R (SLC) | |
| 5CFCRD.2048-06 | CompactFlash 2 GB B&R (SLC) | |
| 5CFCRD.4096-06 | CompactFlash 4 GB B&R (SLC) | |
| | **Terminal blocks** | |
| 0TB704.9 | Accessory terminal block, 4-pin, screw clamp terminal block 2.5 mm² | |
| 0TB704.91 | Accessory terminal block, 4-pin, push-in terminal block 2.5 mm² | |
| | **Optional accessories** | |
| | **Batteries** | |
| 0AC201.91 | Lithium batteries 4 pcs., 3 V / 950 mAh button cell | |
| 4A0006.00-000 | Lithium battery, 3 V / 950 mAh, button cell | |
| | **Interface modules** | |
| 4PP065.IF10-1 | PP65 interface module, 1 RS232 interface | |
| 4PP065.IF23-1 | PP65 interface module, 1 RS232 interface, 1 RS485/RS422 interface, RS422 electrically isolated, RS485 electrically isolated and network-capable, RS232/RS485/RS422 in one connector, 1 CAN interface electrically isolated and network-capable, order 0TB704 terminal block separately | |
| 4PP065.IF24-1 | PP65 interface module, 1 PROFIBUS DP slave interface electrically isolated and network-capable, 1 RS232 interface, 1 RS422/RS485 interface, RS422/RS485: electrically isolated and network-capable, RS232/RS422/RS485 in one connector | |
| 4PP065.IF33-1 | PP65 interface module, 2 CAN interfaces electrically isolated and network-capable, order 0TB704 terminal block separately | |
| | **Legend strips** | |
| 4A0075.00-000 | 5 piece of DIN A4 legend strips, 16 areas for all in all 40 PP65 5.7" devices, Download the CorelDraw file from the web site. | |
| | **USB accessories** | |
| 5MMUSB.2048-01 | USB 2.0 flash drive 2048 MB B&R | |

Table 1: 4PP065.0571-X74F - Order data

## 2 Technical data

| Model number | 4PP065.0571-X74F |
|---|---|
| **General information** | |
| B&R ID code | 0xB9BC |
| LEDs | |
| Quantity | 4 |
| CF (CompactFlash) | Orange |
| Status | Red/Green |
| X2X | Orange |
| User | Green |
| Battery | |
| Type | Renata 950 mAh |
| Service life | 4 years [1)] |
| Removable | Yes, accessible from the outside |
| Variant | Lithium ion |

Table 2: 4PP065.0571-X74F - Technical data

| Model number | 4PP065.0571-X74F |
|---|---|
| Backup capacitor | |
| Buffer time | 10 min |
| Certifications | |
| CE | Yes |
| UL | cULus E115267<br>Industrial control equipment |
| EAC | Yes |
| **Controller** | |
| Bootloader, operating system | |
| PP65 supported starting with version | Automation Runtime, C2.96 |
| Processor | |
| Type | Geode LX800, 32-bit x86 |
| Clock frequency | 500 MHz |
| L1 cache | 128 kB (64 kB I-cache / 64 kB D-cache) |
| L2 cache | 128 kB |
| Expanded command set | MMX technology, 3D Now |
| Floating point unit (FPU) | Yes |
| Flash | 4 MB (for firmware) |
| Cooling | Passive via heat sink |
| Mode/Node switches | 2, 16 positions each |
| Remanent variables | 32 kB |
| Watchdog | MTCX [2] |
| Real-time clock | |
| Accuracy | At 25°C: Typ. 30 ppm (2.5 seconds) per day [3] |
| Battery-backed | Yes |
| Power failure logic | |
| Controller | MTCX [2] |
| Buffer time | 10 ms |
| Graphics | |
| Controller | Geode LX800 |
| Memory | 8 MB shared memory (allocated in RAM) |
| Standard memory | |
| RAM | 128 MB DDR SDRAM |
| User RAM | 232 kB SRAM |
| PP65 Compact IF slot | 1 |
| **Display** | |
| Type | TFT color |
| Diagonal | 5.7" (144 mm) |
| Colors | 262,144 |
| Resolution | QVGA, 320 x 240 pixels |
| Contrast | 350:1 |
| Viewing angles | |
| Horizontal | Direction R / Direction L = 60° |
| Vertical | Direction U = 65° / Direction D = 50° |
| Backlight | |
| Brightness | 500 cd/m² |
| Half-brightness time | 50,000 h |
| Touch screen | |
| Technology | Analog, resistive |
| Controller | B&R, 12-bit |
| Transmittance | 70% ±10% |
| Screen rotation | Yes (see chapter "Installation", section "Screen rotation") |
| **Interfaces** | |
| CompactFlash slot 1 | |
| Quantity | 1 |
| Type | Type I |
| Variant | Primary IDE device |
| USB | |
| Quantity | 2 |
| Type | USB 2.0 |
| Variant | Type A |
| Transfer rate | Low speed (1.5 Mbit/s), full speed (12 Mbit/s), high speed (480 Mbit/s) |
| Current-carrying capacity | Max. 500 mA per connection |
| Ethernet | |
| Quantity | 1 |
| Controller | Intel 82551ER |
| Variant | Shielded RJ45 port (10/100 Base-T) |
| Transfer rate | 10/100 Mbit/s |
| Max. baud rate | 100 Mbit/s |
| Cables | S/STP (Category 5) |
| LED status indicators | Link/Activity |

Table 2: 4PP065.0571-X74F - Technical data

| Model number | 4PP065.0571-X74F |
|---|---|
| X2X | |
| Type | X2X Link master |
| Quantity | 1 |
| Variant | 4-pin male multipoint connector |
| Internal bus power supply | No |
| Number of stations | Max. 253 |
| Distance between 2 stations | Max. 100 m |
| Network topology | Line |
| Terminating resistor | Internal |
| **Keys** | |
| Variant | Membrane keypad with metallic snap-action disks |
| Total keys | 10 membrane keys |
| Function keys | 10 (with slide-in labels) |
| Service life | > $10^6$ actuations with 1 ±0.3 to 3 ±0.3 N operating force |
| **Electrical properties** | |
| Nominal voltage | 24 VDC ±25% |
| Nominal current | 0.45 A |
| Inrush current | Max. 2.8 A |
| Power consumption | Typ. 10 W |
| Galvanic isolation | No |
| **Operating conditions** | |
| Installation elevation above sea level | |
| 0 to 2000 m | No limitation |
| >2000 m | Reduction of ambient temperature by 0.5°C per 100 m |
| Degree of protection per EN 60529 | Back: IP20 (only with an inserted CompactFlash card)<br>Front: IP65 / NEMA 250 type 4X, dust and sprayed water protection |
| **Ambient conditions** | |
| Temperature | |
| Operation | 0 to 50°C |
| Storage | -20 to 70°C |
| Transport | -20 to 70°C |
| Relative humidity | |
| Operation | 10 to 90%, non-condensing |
| Storage | T ≤ 40°C: 5 to 90%, non-condensing<br>T > 40°C: <90%, non-condensing |
| Vibration | |
| Operation (continuous) | 2 to 9 Hz: 1.75 mm amplitude / 9 to 200 Hz: 0.5 g |
| Operation (occasional) | 2 to 9 Hz: 3.5 mm amplitude / 9 to 200 Hz: 1 g |
| Storage | 2 to 8 Hz: 7.5 mm amplitude / 8 to 200 Hz: 2 g / 200 to 500 Hz: 4 g |
| Transport | 2 to 8 Hz: 7.5 mm amplitude / 8 to 200 Hz: 2 g / 200 to 500 Hz: 4 g |
| Shock | |
| Operation | 15 g, 11 ms |
| Storage | 30 g, 15 ms |
| Transport | 30 g, 15 ms |
| **Mechanical properties** | |
| Housing | |
| Material | Polyester |
| Front | Multi-layered panel overlay with insertion slots for key labels |
| Dimensions | |
| Width | 203 mm |
| Height | 145 mm |
| Depth | 56.5 mm |
| Weight [4)] | 0.75 kg |

Table 2: 4PP065.0571-X74F - Technical data

1) Typical service life (at 50% buffer operation: 25°C when device off, 50°C when device on).
Maximum service life in 24h operation (no buffer): 6 years at 25°C, 5 years at 50°C.
Maximum service life when device switched off: 2 years at 25°C, 1 year at 50°C.
2) Maintenance Controller Extended.
3) At max. specified ambient temperature: Typ. 50 ppm (4 s); worst case 100 ppm (8 s)
4) Weight including fasteners and battery (46.5 g) but without an interface module.

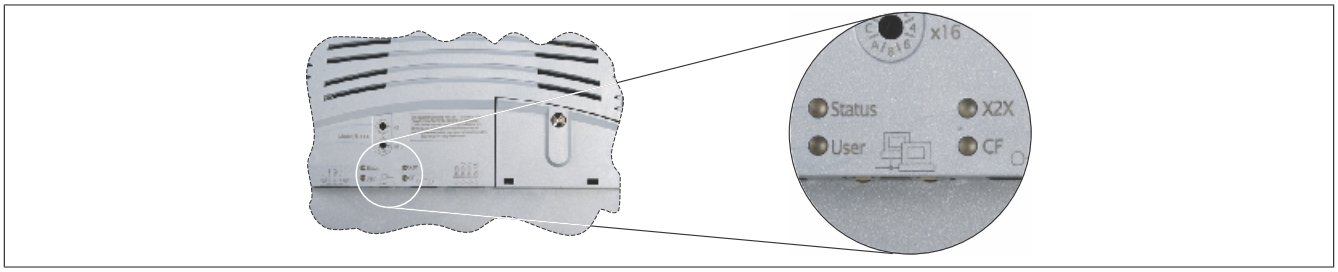
# 3 Supported interface modules

Support for interface modules is provided starting with the following Automation Runtime versions:

| | Interface modules | | | |
|---|---|---|---|---|
| | 4PP065.IF10-1 | 4PP065.IF23-1 | 4PP065.IF24-1 | 4PP065.IF33-1 |
| Automation Runtime version | C2.96 | C2.96 | A3.07 | C2.96 |

# 4 Diagnostic LEDs

There are four diagnostic LEDs on the back of the PP65.




## Information:

**The behavior of the Status LED has changed starting with AR J2.96, E3.01 and B3.06.**

## 4.1 Diagnostic LEDs up to AR I2.96, D3.01 and A3.06

| LED | Color | Status | Description |
|---|---|---|---|
| Status | Red | On | Error/Reset |
| | Orange | On | Boot or Ready mode |
| User | Green | On/Off | LED operable by the user (with the AsHW library) |
| X2X | Orange | On | Module sending data via the X2X Link interface |
| CF | Orange | On | CompactFlash card being accessed |

## 4.2 Diagnostic LEDs starting with AR J2.96, E3.01 and B3.06

| LED | Color | Status | Description |
|---|---|---|---|
| Status | see following table "Status LED blink codes" | | |
| User | Green | On/Off | LED operable by the user (with the AsHW library) |
| X2X | Orange | On | Module sending data via the X2X Link interface |
| CF | Orange | On | CompactFlash card being accessed |

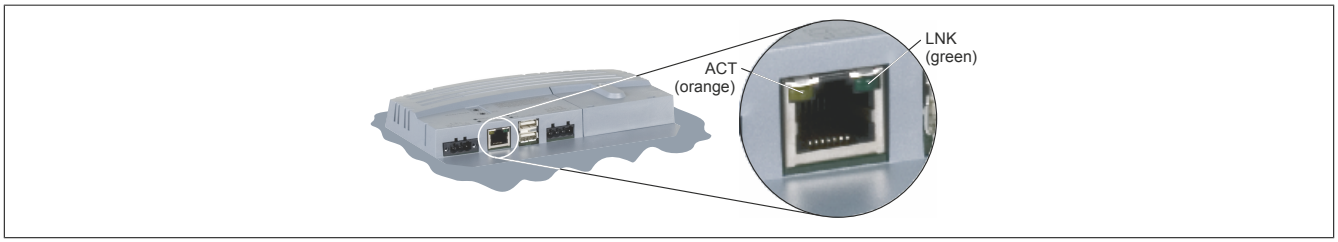
### Status LED blink codes

| Blink codes (200 ms pattern) | Function |
|---|---|
| | Error/Reset |
| | No errors, normal operation |
| | Battery not installed or battery capacity too low |
| | CompactFlash media not found |
| | Reserved for future blink codes |

Because blink codes can only signal one error at a time, errors with higher priority take precedence. Fatal errors have a higher priority than less significant errors (e.g. low battery capacity).

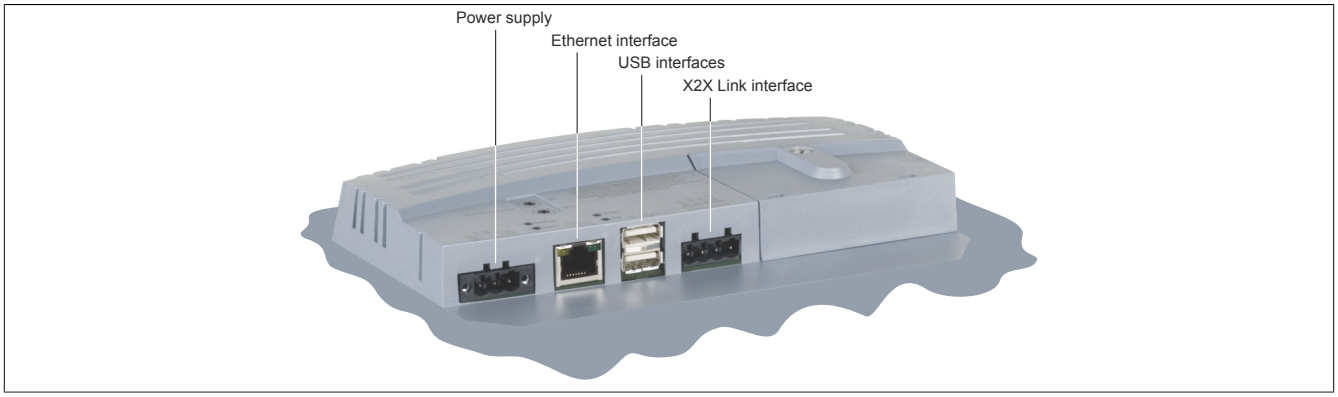
## 4.3 ACT / LNK LEDs for the RJ45 interface

There are two additional LEDs for the Ethernet interface.

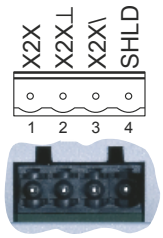



| LED | Color | Status | Description |
|---|---|---|---|
| ACT | Orange | On | No Ethernet activity on the bus. |
| | | Blinking | Ethernet activity on the bus. |
| LNK | Green | On | Link established to the remote station |

# 5 Connection elements



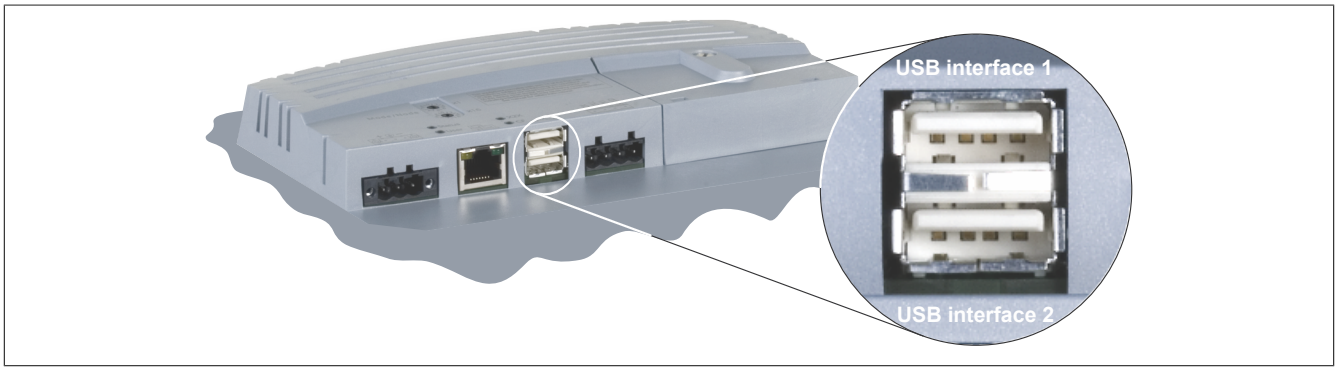

## 5.1 X2X Link interface

| Interface | Pinout | | |
|---|---|---|---|
| User interface<br>X2X Link<br>  <br>4-pin male multipoint connector | **Terminal** | **X2X Link** | |
| | 1 | X2X | X2X data |
| | 2 | X2X⊥ | X2X ground |
| | 3 | X2X\ | X2X data inverted |
| | 4 | SHLD | Shield |
| | **Required accessories** | | |
| | 0TB704.9 | Accessory terminal block, 4-pin, screw clamp terminal block 2.5 mm² | |
| | 0TB704.91 | Accessory terminal block, 4-pin, cage clamp terminal block, 2.5 mm² | |



## 5.2 USB interface

This Power Panel 65 features a USB 2.0 (Universal Serial Bus) host controller with two USB interfaces that are accessible externally for the user.




| USB interface | |
|---|---|
| Transfer rate [1] | Low speed (1.5 Mbit/s), full speed (12 Mbit/s), high speed (480 Mbit/s) |
| Power supply | Max. 0.5 A per port [2] |

1) The actual value depends on the operating system or driver used.
2) Each USB interface is protected by a maintenance-free "USB current-limiting switch" (max. 0.5 A).

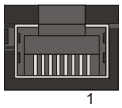
### Warning!

**Peripheral USB devices can be connected to the USB interfaces. Due to the large number of USB devices available on the market, B&R cannot guarantee their functionality. Functionality is ensured when using the USB devices available from B&R.**

### Notice!

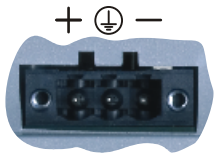
**Because this interface is designed according to general PC specifications, extreme care should be taken with regard to EMC, wiring, etc.**

## 5.3 Ethernet interface

| Interface | Pinout | | |
|---|---|---|---|
| Ethernet interface  1 RJ45 twisted pair female connector (10BaseT / 100BaseT) | **Terminal** | **Ethernet** | |
| | 1 | RXD | Receive signal |
| | 2 | RXD\ | Receive signal inverted |
| | 3 | TXD | Transmit signal |
| | 4 | Termination | Termination |
| | 5 | Termination | Termination |
| | 6 | TXD\ | Transmit signal inverted |
| | 7 | Termination | Termination |
| | 8 | Termination | Termination |

## 5.4 Power supply

The pinout is listed in the following table and printed on the back of the Power Panel. The Power Panel has reverse polarity protection that prevents the supply voltage from being connected incorrectly and damaging the device. Overload protection must be provided by an external fuse (5 A, fast-acting).

| Power supply | Pinout | |
|---|---|---|
|  3-pin male multipoint connector | **Terminal** | **Assignment** |
| | + | 24 VDC |
| | ⏚ | Functional ground |
| | — | GND |
| | **Required accessories** | |
| | 0TB103.9 | Connector, 24 VDC, 3-pin female, 3.31 mm² screw clamps, protected against vibration by the screw flange |
| | 0TB103.91 | Connector, 24 VDC, 3-pin female, 3.31 mm² cage clamp terminal block, protected against vibration by the screw flange |

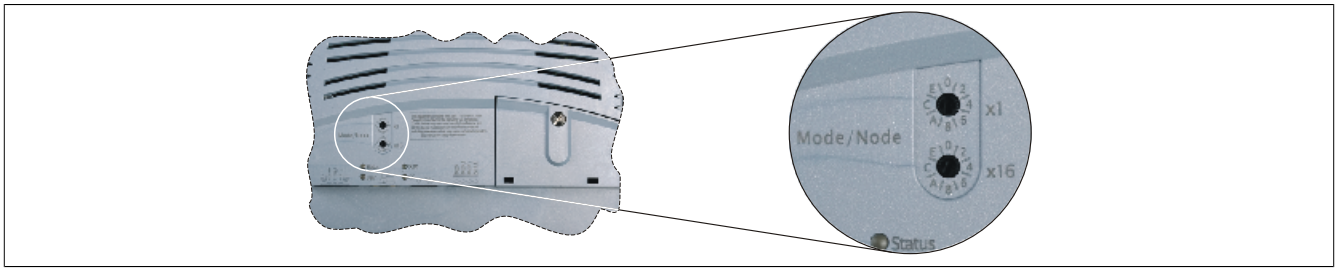
### Notice!

**The functional ground must be connected to ground (e.g. control cabinet) using the shortest possible path. Using the largest possible conductor cross section on the power supply connector is recommended.**

# 6 Key assignments


| Key | Bit | Key | Bit |
|---|---|---|---|
| T1 | 31 | T6 | 23 |
| T2 | 30 | T7 | 22 |
| T3 | 29 | T8 | 21 |
| T4 | 28 | T9 | 20 |
| T5 | 24 | T10 | 16 |

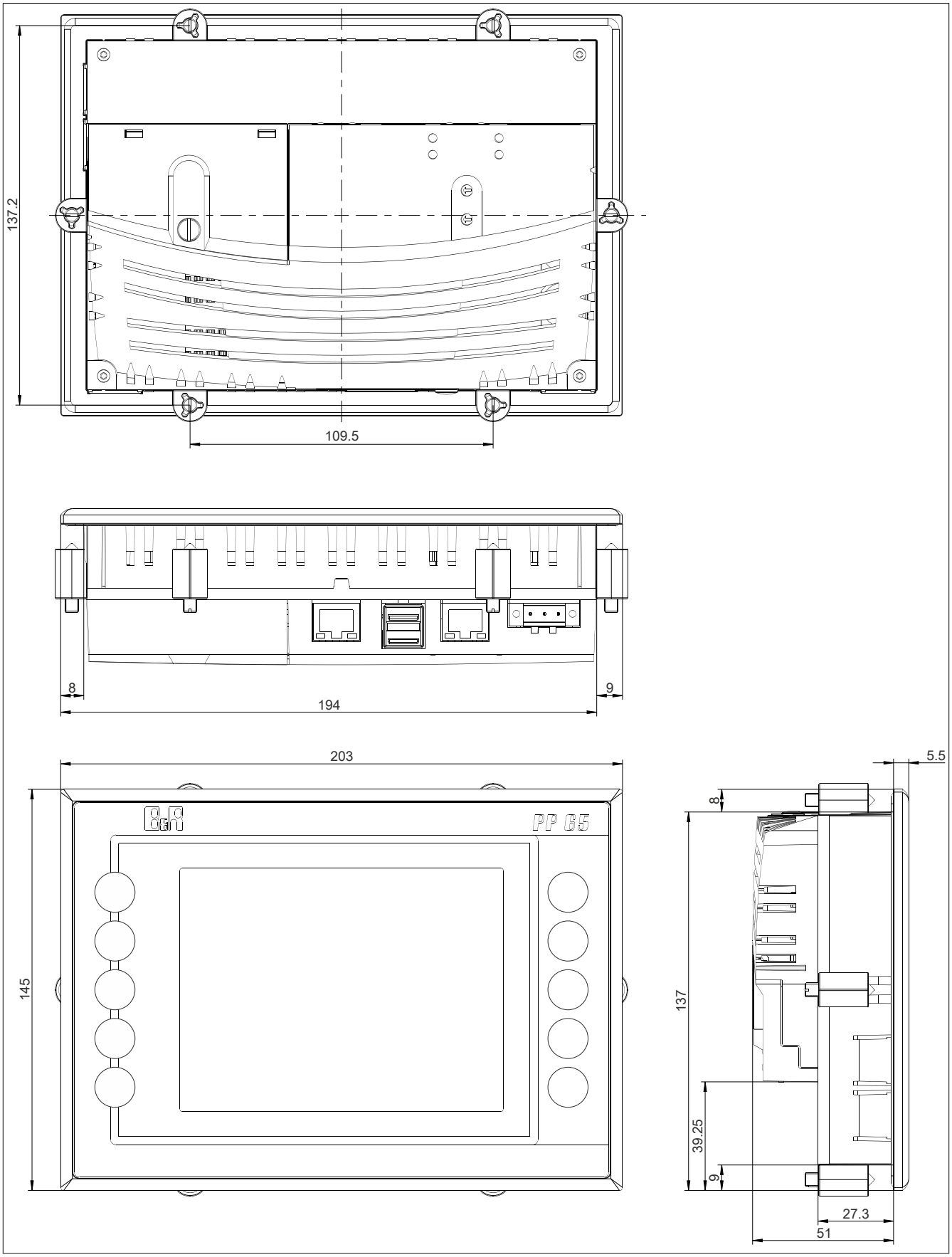
# 7 Operating mode and node number switches




The Power Panel 65 is equipped with 2 hex switches that can be used as operating mode or node number switches. Switch positions 0x01 to 0xFE are used to set the INA node number of the Ethernet interface.

| Switch position | Description |
|---|---|
| 0x00 | Reserved |
| 0x01 to 0xFE | **INA node number** of the Ethernet interface |
| 0xFF | **Diagnostic mode:**<br>Starts up the CPU in diagnostic mode. Does not initialize program sections in User RAM and User FlashPROM. After diagnostic mode, the CPU always starts up with a warm restart. |

# 8 Dimensions




Installation cutout: 188 ±0.5 mm x 130 ±0.5 mm