9. 4PP065.0571-X74F

9.1 Order data

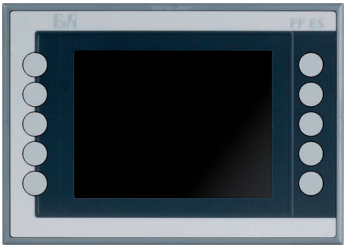
Model number	Short description	Image
4PP065.0571-X74F	Power Panel PP65, 5.7" QVGA color TFT display with touch screen (resistive), 10 function keys, 10 MB DRAM, 232 kB SRAM, CompactFlash slot, Ethernet 10/100, 1x X2X Link, 2x USB, IP65 protection (front side). Order application memory separately. Order TB103 and TB704 terminal blocks separately.	
Required accessories		
0TB103.9	Connector, 24 VDC, 3-pin female, screw clamp, 3.31 mm², protected against vibration by the screw flange	
0TB103.91	Connector, 24 VDC, 3-pin female, cage clamp, 3.31 mm², protected against vibration by the screw flange	
0TB704.9	Accessory terminal block, 4-pin, screw clamp, 1.5 mm²	
0TB704.91	Accessory terminal block, 4-pin, cage clamp, 2.5 mm²	
5CFCRD.0064-03	CompactFlash 64 MB Western Digital	
5CFCRD.0128-03	CompactFlash 128 MB Western Digital	
5CFCRD.0256-03	CompactFlash 256 MB Western Digital	
5CFCRD.0512-03	CompactFlash 512 MB Western Digital	
5CFCRD.1024-03	CompactFlash 1 GB Western Digital	
5CFCRD.2048-03	CompactFlash 2 GB Western Digital	
5CFCRD.4096-03	CompactFlash 4 GB Western Digital	
5CFCRD.8192-03	CompactFlash 8 GB Western Digital	
5CFCRD.0512-04	CompactFlash 512 MB B&R	
5CFCRD.1024-04	CompactFlash 1 GB B&R	
5CFCRD.2048-04	CompactFlash 2 GB B&R	
5CFCRD.4096-04	CompactFlash 4 GB B&R	
5CFCRD.8192-04	CompactFlash 8 GB B&R	
5CFCRD.016G-04	CompactFlash 16 GB B&R	

Table 79: 4PP065.0571-X74F - Order data

Model number	Short description	Image
Optional accessories		
0AC201.91	Lithium batteries, 4 pcs., 3 V / 950 mAh, button cell	
4A0006.00-000	Lithium battery 3 V / 950 mAh, button cell	
4A0075.00-000	5 DIN A4 legend sheets, 16 strips for a total of 40 PP65 5.7" devices, CorelDraw template is available online for download.	
4PP065.IF10-1	PP65 interface module, 1 RS232 interface	
4PP065.IF23-1	PP65 interface module, 1 RS232/RS485/RS422 interface (RS422: electrically isolated, RS485: electrically isolated and network-capable), 1 CAN interface (electrically isolated and network-capable). Order 0TB710.91 terminal blocks separately.	
4PP065.IF24-1	PP65 interface module, 1 PROFIBUS DP slave interface (electrically isolated and network-capable), 1 RS232/RS422/RS485 interface (RS422/RS485: electrically isolated and network-capable)	
4PP065.IF33-1	PP65 interface module, 2 CAN interfaces (electrically isolated and network-capable). Order 0TB710.91 terminal blocks separately.	
5MMUSB.2048-01	USB 2.0 flash drive 2048 MB B&R	
Included in delivery		
4PP065.0571-X74F	Power Panel 65 including installation accessories	
4A0006.00-000	Lithium battery 3 V / 950 mAh, button cell	

Table 79: 4PP065.0571-X74F - Order data (cont.)

9.2 Technical data

Product ID	4PP065.0571-X74F
General information	
B&R ID code	$B9BC
LEDs CF (CompactFlash) Status X2X User	4 Orange Red/green Orange Green
Battery Type Method Service life Removable	 Renata 950 mAh Lithium Ion 4 years [1)] Yes, accessible from the outside
Backup capacitor Buffer time	 10 min.
Certification c-UL-us CE GOST-R	 Yes Yes Yes

Table 80: 4PP065.0571-X74F - Technical data

Product ID	4PP065.0571-X74F
Controller	
Boot loader, operating system PP65 supported beginning with version	Automation Runtime C2.96
Processor Type Clock frequency L1 cache L2 cache Expanded command set Floating point unit (FPU)	 Geode LX800, 32-bit x86 500 MHz 128 kB (64 kB I-Cache / 64 kB D-Cache) 128 kB MMX technology, 3D Now Yes
Flash	4 MB (for firmware)
Cooling	Passive via heat sink
Mode/Node switches	2, 16 digits each
Remanent variables	32 kB
Watchdog	MTCX [2]
Real-time clock Accuracy Battery-buffered	 At 25°C: Typ. 30 ppm (2.5 seconds) per day[3] Yes
Power failure logic Controller Buffer time	 MTCX [2] 10 ms
Graphics Controller Memory	 Geode LX800 8 MB shared memory (reserved in application memory)
Standard memory RAM User RAM	 128 MB DDR SDRAM 200 kB SRAM
PP65 Compact IF slot	1
Interfaces	
CompactFlash slot 1 Amount Type Design	 1 Type I Primary IDE device
USB Amount Type Design Transfer rate Current load	 2 USB 1.1, USB 2.0 Type A Low speed (1.5 Mbit/s), full speed (12 Mbit/s), to high speed (480 Mbit/s) Max. 500 mA per connection
Ethernet Amount Design Controller Transfer rate Max. transfer rate Cables Status LEDs	 1 Shielded RJ45 port (10/100 Base-T) Intel 82551ER 10/100 Mbit/s 100 Mbit/s S/STP (Category 5) Link/Activity

Table 80: 4PP065.0571-X74F - Technical data

Product ID	4PP065.0571-X74F
X2X Amount Type Design Number of stations Distance between stations Network topology Internal bus supply Bus termination resistor	 1 X2X Link master 4-pin multipoint plug Max. 253 Max. 100 m Line No Internal
Display	
Type	Color TFT
Diagonal	5.7" (144 mm)
Colors	262,144
Resolution	QVGA, 320 x 240 pixels
Contrast	350:1
Viewing angle Horizontal Vertical	 Direction R / direction L = 60° Direction U = 65° / direction D = 50°
Backlight Brightness Half-brightness time	 500 cd/m² 50,000 h
Touch screen Technology Controller Degree of transmission	 Analog, resistive B&R, 12-bit 70% ±10%
Screen rotation	Yes (see Chapter 4 "Commissioning", section "Screen rotation" on page 131)
Keys	
Design	Membrane keypad with metallic snap-action disks
Total keys	10 membrane keys
Function keys	10 (labeled with legend strips)
System keys	-
Electrical characteristics	
Rated voltage	24 VDC ±25%
Rated current	0.45 A
Starting current	Max. 2.8 A
Power consumption	Typ. 10 W
Electrical isolation	No
Operating conditions	
EN 60529 protection	IP20 back side (only with installed CompactFlash card) IP65 / NEMA 250 type 4X, dust and sprayed water protection (front side)

Table 80: 4PP065.0571-X74F - Technical data

Product ID	4PP065.0571-X74F
Environmental conditions	
Temperature Operation Storage Transport	 0 to 50°C -20 to 70°C -20 to 70°C
Relative humidity Operation Storage	 10 to 90%, non-condensing T ≤ 40°C: 5 to 90%, non-condensing T > 40°C: < 90%, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	 2 to 9 Hz: 1.75 mm amplitude / 9 to 200 Hz: 0.5 g 2 to 9 Hz: 3.5 mm amplitude / 9 to 200 Hz: 1 g 2 to 8 Hz: 7.5 mm amplitude / 8 to 200 Hz: 2 g / 200 to 500 Hz: 4 g 2 to 8 Hz: 7.5 mm amplitude / 8 to 200 Hz: 2 g / 200 to 500 Hz: 4 g
Shock Operation Storage Transport	 15 g, 11 ms 30 g, 15 ms 30 g, 15 ms
Installation at altitudes above sea level	Max. 3000 m
Mechanical characteristics	
Housing	Polyester
Front	Multi-layer membrane with insertion slots for key labels
Outer dimensions Width Height Depth	 203 mm 145 mm 56.5 mm
Weight [4)]	0.75 kg

Table 80: 4PP065.0571-X74F - Technical data

1) Typical service life (at 50% buffer operation: 25°C when device turned off, 50°C when device turned on)
   Maximum service life in 24-hour operation (no buffer): 6 years at 25°C, 5 years at 50°C
   Maximum service life when device turned 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

9.3 Supported interface modules

Interface modules are supported beginning 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

Table 81: 4PP065.0571-X74F - Supported interface modules

9.4 Diagnostic LEDs

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

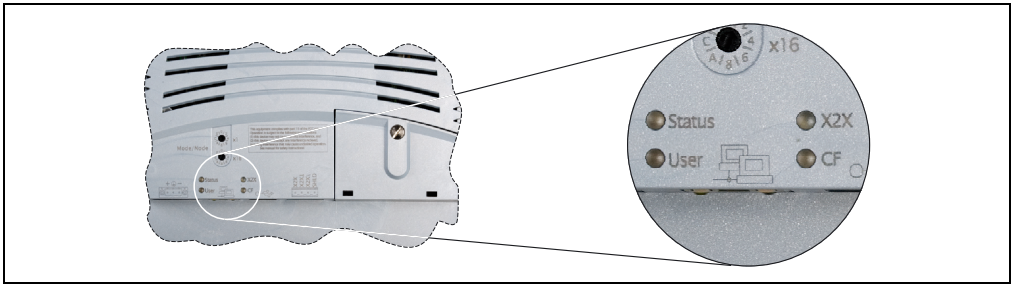


Figure 26: 4PP065.0571-X74F - Diagnostic LEDs

Information:

The behavior of the status LED has been changed beginning with AR versions J2.96, E3.01 and B3.06.

9.4.1 Diagnostic LEDs until AR versions I2.96, D3.01 and A3.06

LED	Color	Status	Description
Status	Red	On	Error / Reset
	Orange	On	Boot / Ready mode
User	Green	On / Off	This LED can be operated by the user (with the AsHW library).
X2X	Orange	On	The module is sending data via the X2X Link interface.
CF	Orange	On	CompactFlash card being accessed

Table 82: 4PP065.0571-X74F - Diagnostic LEDs until AR versions I2.96, D3.01 and A3.06

9.4.2 Diagnostic LEDs beginning with AR versions J2.96, E3.01, B3.06

LED	Color	Status	Description
Status	See Table 84 "4PP065.0571-X74F - Status LED blink codes".		
User	Green	On / Off	This LED can be operated by the user (with the AsHW library).
X2X	Orange	On	The module is sending data via the X2X Link interface.
CF	Orange	On	CompactFlash card being accessed

Table 83: 4PP065.0571-X74F - Diagnostic LEDs beginning with AR versions J2.96, E3.01, B3.06

Blink code (200 ms grid)	Meaning
	Error / Reset
	No error, normal operation
	No battery or battery capacity low
	No CompactFlash
	Reserved for future blink codes

Table 84: 4PP065.0571-X74F - Status LED blink codes

Since only one error can be indicated by a blink code, more important errors are assigned a higher priority. Fatal errors, for example, have a much higher priority than unimportant errors (e.g. battery capacity low).

9.4.3 ACT/LNK LEDs for the RJ45 ports

There are two additional LEDs next to the Ethernet interface:

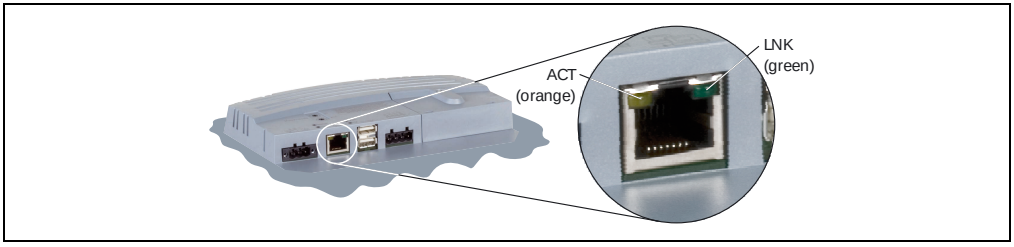


Figure 27: 4PP065.0571-X74F - Ethernet LEDs

LED	Color	Status	Description
ACT	Orange	On	No Ethernet activity on bus
		Blinking	Ethernet activity on the bus
LNK	Green	On	A link to the remote station has been established.

Table 85: 4PP065.0571-X74F - ACT/LNK LEDs for the RJ45 ports

9.5 Connection elements

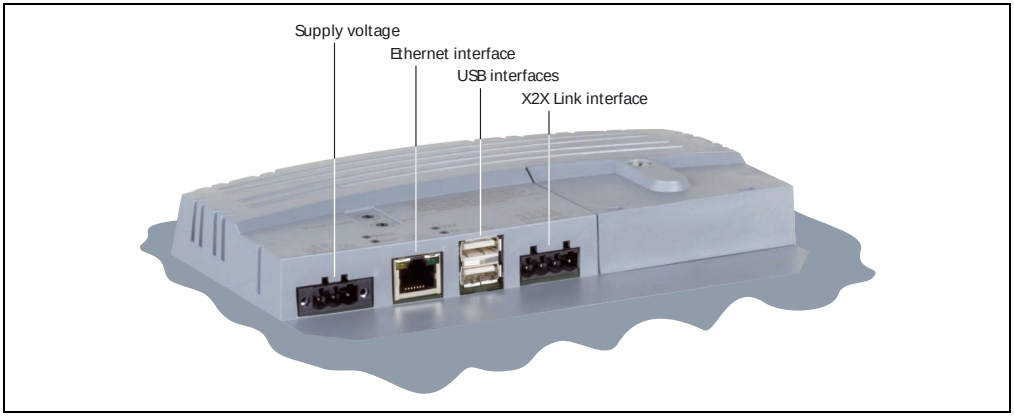


Figure 28: 4PP065.0571-X74F - Connection elements

9.5.1 X2X Link interface

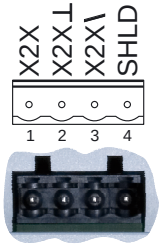
Interface	Pin assignments		
Application interface X2X Link  4-pin multipoint plug	**Terminal**	**X2X Link**	
	1	X2X	X2X data
	2	X2X⊥	X2X ground
	3	X2X\	X2X data inverted
	4	SHLD	Shield
	Required accessories		
	0TB704.9	Accessory terminal block, 4-pin, screw clamp, 1.5 mm²	
	0TB704.91	Accessory terminal block, 4-pin, cage clamp, 2.5 mm²	

Table 86: 4PP065.0571-X74F - Pin assignments - X2X Link

9.5.2 USB interface

This Power Panel 65 device has a USB 2.0 (Universal Serial Bus) host controller with two USB ports that are easily accessible to the user.

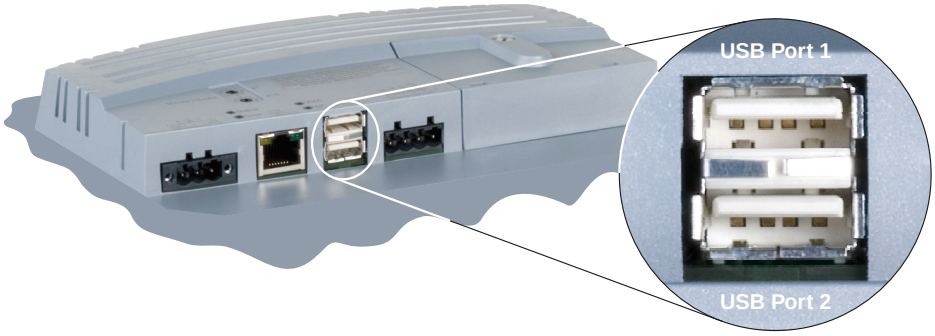
USB interface	
	
Transfer speed [1]	Low speed (1.5 Mbit/s), full speed (12 Mbit/s), to high speed (480 Mbit/s)
Power supply	Max. 500 mA per port [2]

Table 87: 4PP065.0571-X74F - USB ports

1) The actual value depends on the operating system or driver being used.

2) For safety, every USB port is equipped with a maintenance-free "USB current-limiting circuit breaker" (max. 500 mA).

Warning!

Peripheral USB devices can be connected to the USB ports. Due to the vast number of USB devices available on the market, B&R cannot guarantee their performance. B&R does guarantee the performance of all USB devices that they provide.

Important!

Because of general PC specifications, these interfaces should be handled with extreme care with regard to EMC, location of cables, etc.

9.5.3 Ethernet interface

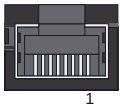
Interface	Pin assignments		
Ethernet interface  1 RJ45 twisted pair socket (10BaseT/100BaseT)	**Terminal**		
	1	RXD	Receive signal
	2	RXD\	Receive signal inverted
	3	TXD	Transmit signal
	4	Termination	Termination
	5	Termination	Termination
	6	TXD\	Transmit signal inverted
	7	Termination	Termination
	8	Termination	Termination

Table 88: 4PP065.0571-X74F - Pin assignments - Ethernet interface

9.5.4 Supply voltage

Pin assignments can be found both 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, which would damage the device. Overload protection must be provided by an external fuse (5A, fast-acting).

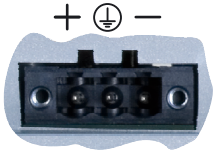
Supply voltage	Pin assignments	
 3-pin multipoint plug	**Terminal**	**Assignment**
	+	+ 24 VDC
	⏚	Functional ground
	—	GND
	Required accessories	
	0TB103.9	Connector, 24 VDC, 3-pin female, screw clamp, 3.31 mm², protected against vibration by the screw flange
	0TB103.91	Connector, 24 VDC, 3-pin female, cage clamp, 3.31 mm², protected against vibration by the screw flange

Table 89: 4PP065.0571-X74F - Pin assignments - Supply voltage

Important!

The pin's connection to the functional ground should be as short as possible (e.g. in the control cabinet). We recommend using the largest possible conductor cross-section on the supply plug.

9.6 Operating mode and node number switches

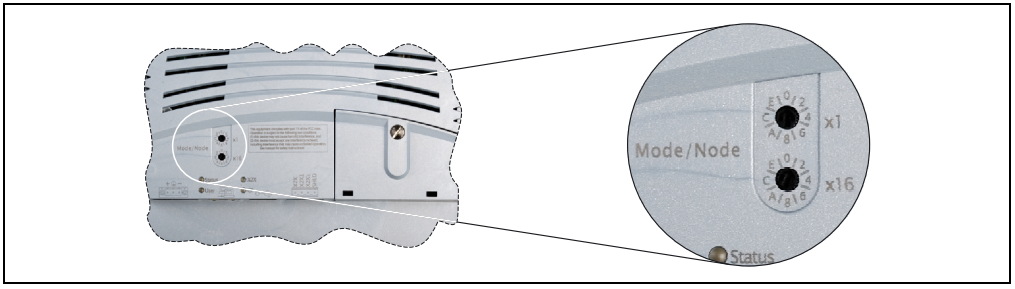


Figure 29: 4PP065.0571-X74F - Operating mode and node number switches

The Power Panel 65 is equipped with 2 hex switches that are used for the operating mode or node number of the device. Switch positions 01 - FE are used to set the INA station number for the Ethernet interface.

Switch position	Description
00	Reserved
01 - FE	**INA node number** of the Ethernet interface
FF	Diagnostic mode: The CPU boots in diagnostic mode. Program sections in User RAM and User FlashPROM are not initialized. After diagnostic mode, the CPU always boots with a cold restart.

Table 90: 4PP065.0571-X74F - Operating mode and node number switches

9.7 Dimensions

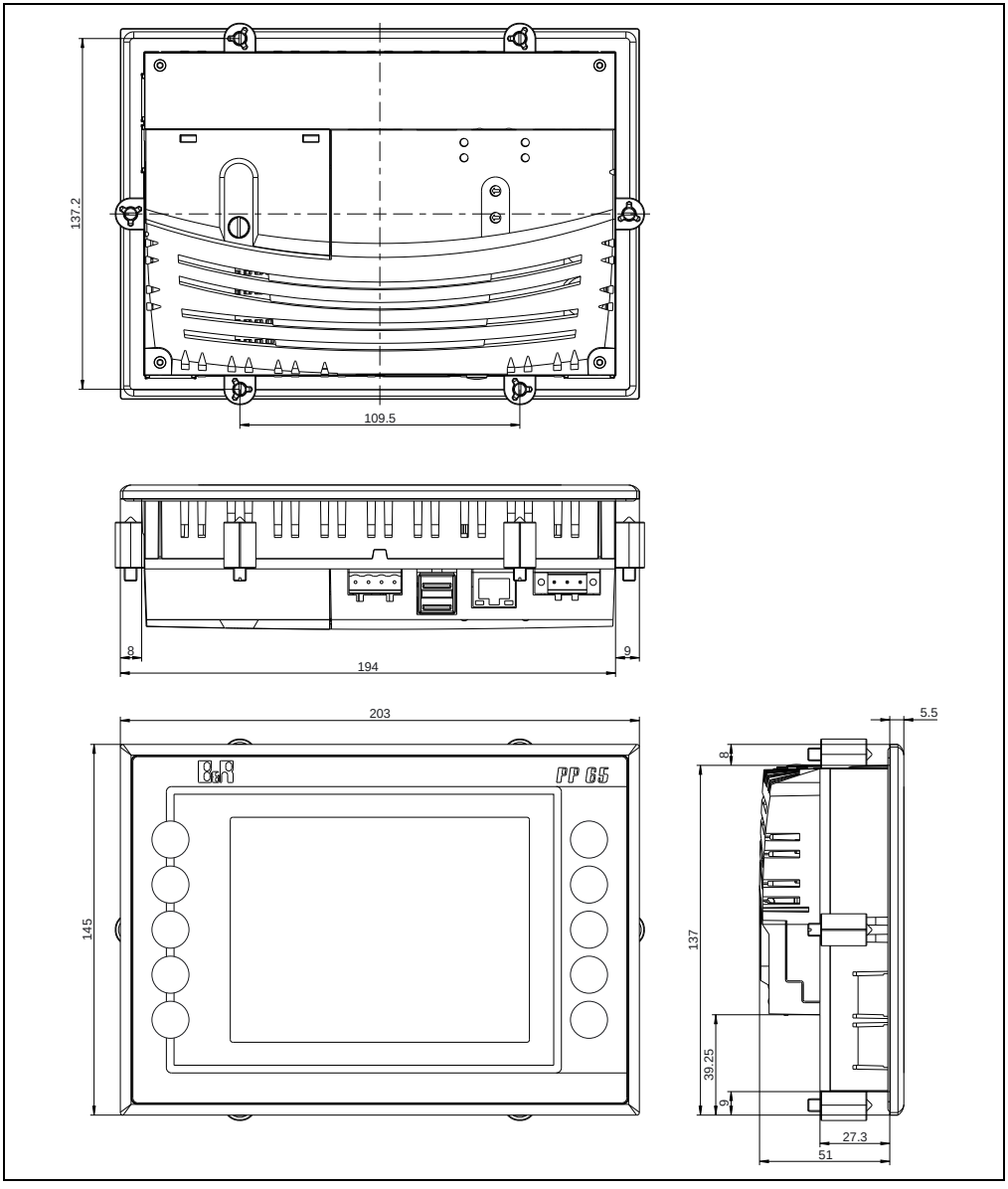


Figure 30: 4PP065.0571-X74F - Dimensions

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