NPN102

Node Adapter PROFINET RT

The NPN102 PROFINET RT node adapter maps the powerful and flexibly configurable M100 station to a standard PROFINET interface. The operating modes of the M100 I/O modules are defined during the configuration and are transferred to the station node during start-up.

Features

- PROFINET RT device
- Integrated 2-port switch for line cabling
- Integrated power supply unit for module supply: 20 W
- Diagnostics LEDs according to PROFINET recommendation

Part type designation	Part number
NPN102	00045270-00
NPN102 EC	00045271-00

Common properties	
Basic function	PROFINET RT device, 2-port switch, integrated station power supply
System	Bachmann system M100
Module bus interface	
System	M100
Slot type	0/C
Network interface / bus interface	
Protocol standard	GSDML 2.3
Substitute value during interruptions	Configurable behavior: • Substitute value • Off state • Last value
Bus interface	2x RJ-45
Data transfer rate	10/100 Mbit
Cable specification	CAT-5
Maximum cable length	100 m
Diagnostics	
Electronic type plate	Yes (application interface and in the engineering tool)
Machine readable type plate	Yes (QR code with type and part information and internet link)
Environmental conditions sensor	Integrated temperature sensor
Diagnostics interface	USB-C socket
Operational indications	LED "MOD" (red/green) module status LED “Bus” green during data exchange with the controller, red when no data exchange is taking place
Error indications	LED “Dia” red when diagnostic error is active
Energy supply	
Supply voltage, nominal	24 V DC
Supply voltage, range	18 V to 32 V DC
Supply voltage, short-term overload	40 V for 100 ms
Power consumption, continuous, max.	25 W
Input current, continuous, max.	1.4 A @ 18 V DC, T_a = 25 °C
Input current, inrush	46 A for < 1 ms (@ 24 V DC, T_a = 25 °C)
Input capacity	Typ. 220 µF
Maximum residual ripple	2.4 V_{ss} at 50 Hz, 60 Hz, 100 Hz and 120 Hz
Power output for modules/backplane	20 W
Permitted voltage interruptions	PS1 according to IEC 61131-2
Reverse polarity protection	Yes, continuously (up to -32 V)
Limitation of supply / fusing	No internal protection External protection with circuit breaker characteristic: B, C, D, Z or K Max. nominal current 8 A DC for the supply forwarding
Parallel operation	Yes, with PSI135 modules (if galvanic isolation is required, the NPN102 module must not be supplied via the 24 V signal supply)
Power dissipation	2.7 W @ 24 V DC, T_a = 25 °C, P_{out} = 0 W 4.0 W @ 24 V DC, T_a = 25 °C, P_{out} = 20 W 3.3 W @ 32 V DC, T_a = 60 °C, P_{out} = 0 W 4.8 W @ 32 V DC, T_a = 60 °C, P_{out} = 20 W
Power consumption from backplane	4.5 W
Supply terminal block bridge	Yes, internal connection from 1+ to 2+, and 1- to 2-

Product safety	
Galvanic isolation	850 V AC
Degree of protection acc. IEC 60529	IP40, terminal block IP30
Protection class acc. IEC 61010-1, IEC 61010-2-201	III
Overvoltage category acc. IEC 61010-1	II
Environmental conditions	
Temperature range, operating	Standard: -30 °C to +60 °C Extended Climate: -30 °C to +70 °C
Temperature range, transport and storage	-40 °C to +85 °C
Installation altitude, max.	Up to 2000 m without temperature derating 2000 m to 4500 m: Reduction of the max. ambient temperature by 0.1 °C per 100 m elevation
Air pressure	106 kPa to 58 kPa (0 m to 4500 m)
Relative humidity, operation	Standard: 0 % to 100 % noncondensing Extended Climate: 0 % to 100 % with temporary condensation
Pollution degree acc. IEC 61010-1	Standard: 2, noncondensing Extended Climate: 2
Vibration	With BPS1nn: • 4 g (11.5 Hz to 500 Hz) • 7.5 mm amplitude (2 Hz to 11.5 Hz) • Test duration: 15 h With BPR1nn: • 4 g (IACS E10, IEC 61131-2)
Shock	45 g max. (test scope 18 shocks) 20 g permanently (test scope 6000 shocks)
Approvals/certificates	
Product safety	CE, UKCA: in preparation cULus (NRAQ, NRAQ7): in preparation
Hazard area operation	ATEX: Ex II 3G Ex ec IIC Gc: in preparation
Maritime	ABS, BV, DNV, KR, LR, NK, RINA: in preparation
Hazardous substances and waste treatment	RoHS, RoHS China, REACH, WEEE
Quality management	ISO 9001 for development and production
Engineering	
Configuration tool	SolutionCenter (≥ V2.85)
Firmware package update	Yes
Secure boot / root-of-trust	Yes
Mounting/installation	
Mounting type	Inserting and screwing onto the backplane with integrated M4 screw
Dimensions	
Number of slots	1
Size unpacked W × H × D	23.3 mm × 152.5 mm × 95.7 mm
Mass unpacked	294 g

Order data

Part type designation	Part number	Description
NPN102	00045270-00	Fieldbus node adapter PROFINET RT for M100 system Integrated 2-port switch, 2x RJ45 socket; integrated power supply unit 20 W; without terminal block
NPN102 EC	00045271-00	Like NPN102; Extended Climate Range

Accessories

Part type designation	Part number	Description
BPR1nn	00039235-nn	Backplane for DIN-rail mounting Active backplane system M100: BPR1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for DIN-rail mounting; delivery without backplane slot covers and without mounting rail
BPR1nn EC	00039236-nn	Like BPR1nn; Extended Climate Range
BPS1nn	00039237-nn	Backplane for direct screw mounting Active backplane system M100: BPS1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for direct screw mounting; delivery without backplane slot covers and without screws
BPS1nn EC	00039238-nn	Like BPS1nn; Extended Climate Range
TPI100_W4_P5.0_Cgy_Lsup		Supply terminal block Completely removable terminal block, push-in spring connector for system M100, 4-way/contacts, pitch 5.0 mm, female, conductors flexible 0.2 mm² to 2.5 mm² (24 to 14 AWG), solid 0.2 mm² to 1.5 mm² (24 to 16 AWG), with wire end ferrules 0.25 mm² to 1.5 mm² (24 to 16 AWG), stripping length: 10 mm, rating: 300 V / 8 A per contact, connector color: gray, push-release: yellow, labeling: 1+/1-/2+/2-
TKP106		Keying element Keying element for signal terminal blocks and supply terminal blocks TPI100 for system M100, plastic ring with 6 keying elements
TPI100_W4_Set [1)]	00042413-00	Terminal block set for M100 modules that only require the supply terminal block: • 1x TPI100_W4_P5.0_Cgy_Lsup • 1x TKP106

[1)] *All components of the set are also available in bulk packages.*