

MANUAL

DNP31.0 DeviceNet communication module

Universal Motor Controller UMC100.3





Important notice

Description

The DNP31.0 device allows the connection of the Universal Motor Controller UMC100.3 to a DeviceNet network.

Target group

This manual is intended for the use of specialists in electrical installation and control and automation engineering, who are familiar with the applicable national standards.




Safety requirements

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Using this manual

Symbols

This manual contains symbols to point the reader to important information, potential risks and precautionary information. The following symbols are used:

| | |
|---|---|
|  | Sign to indicate a potentially dangerous situation that can cause damage to the connected devices or the environment. |
|  | Sign to indicate important information and conditions. |
|  | Sign to indicate a potentially dangerous situation that can cause human injuries. |



Terms and abbreviations

| | |
|----------|---|
| SMK 3.0 | Single Mounting Kit for the fieldbus interfaces |
| UMC100.3 | Universal Motor Controller |



Related documents

| Technical documentation | Document no. |
|-------------------------|-----------------|
| UMC100.3 Manual | 2CDC135032D0204 |

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Overview

This chapter contains a short description of the DeviceNet standard and the DNP31.0 DeviceNet Interface module.

DeviceNet standard

The DeviceNet network has a linear bus topology. Terminating resistors are required on each end of the trunk line. Drop lines as long as 6 meters (20 feet) each are permitted, allowing one or more nodes to be attached. DeviceNet allows branching structures only on drop lines.

The DeviceNet communication interface

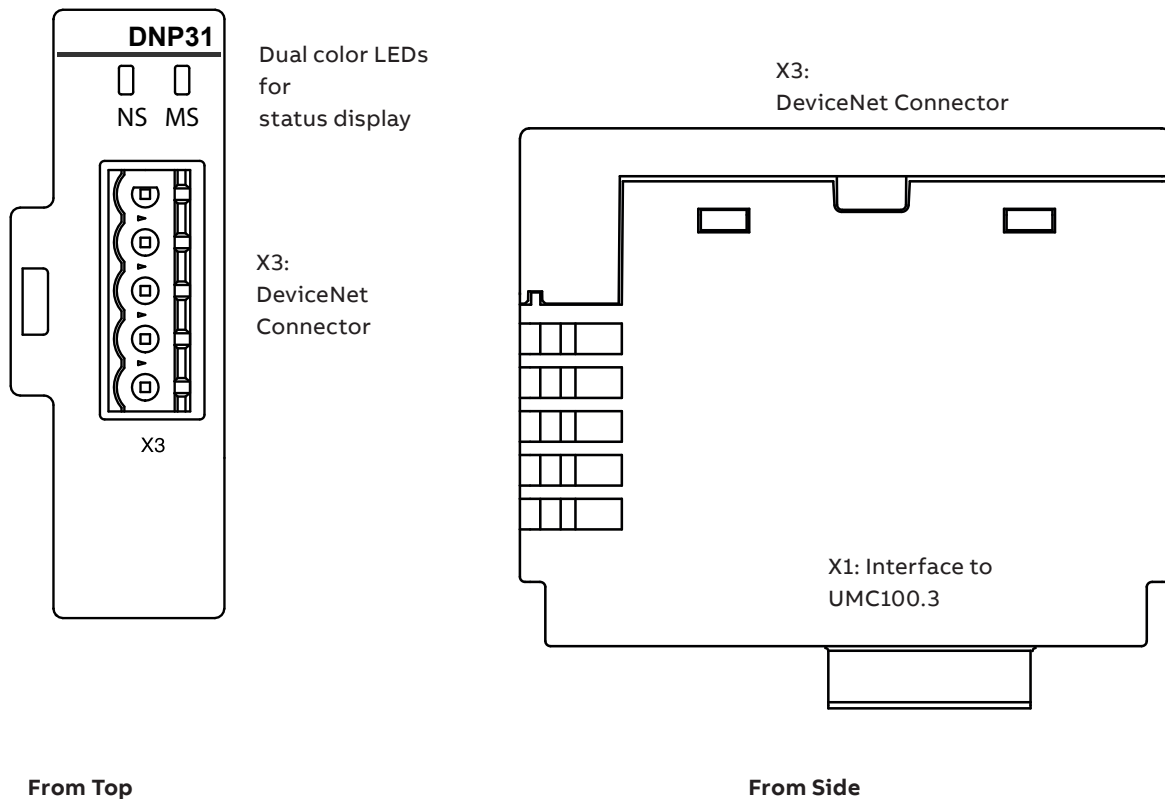
The DNP31.0 communication interface is an optional device for the UMC100.3 which enables the connection of the UMC100.3 to a DeviceNet system. The UMC100.3 is considered as a slave in the DeviceNet network.

- Use UMC100.3 to set bus address and baud rate (or autobaud) of the DeviceNet communication. Once the address is set, it is stored in the DNP31.0, even in case of supply voltage breakdown.

Through the DNP31.0 DeviceNet communication interface it is possible to:

- Give control commands to the drive (Start, Stop etc.)
- Read status information and actual values from the drive
- Read and write UMC100.3 parameter values
- Reset a UMC100.3 trip.

The DNP31.0 acts as a class 2 only slave with predefined master-slave connection set services. These include the explicit messaging, the poll-response service and the change of state/cyclic service. The DeviceNet commands and services supported by the DNP31.0 DeviceNet communication interface are discussed in chapter "communication".



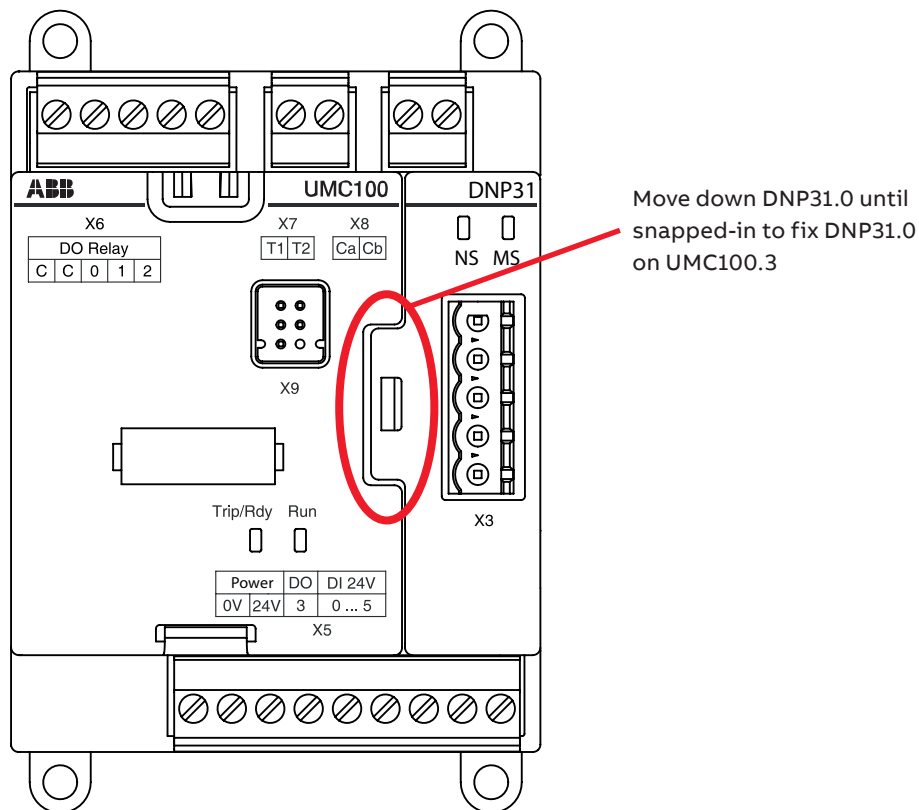
Installation

Mechanical installation

The DeviceNet adapter module DNP31.0 can be mounted either on the UMC100.3 itself or separately from the UMC100.3 using the single mounting kit (SMK3.0).

Mounting the DNP31.0 on the UMC100.3

When the module is installed directly on the UMC100.3 the UMC100.3 with DNP31.0 acts like a device with integrated DeviceNet communication. No additional accessories are needed.



01 Image shows UMC100.3 DC.

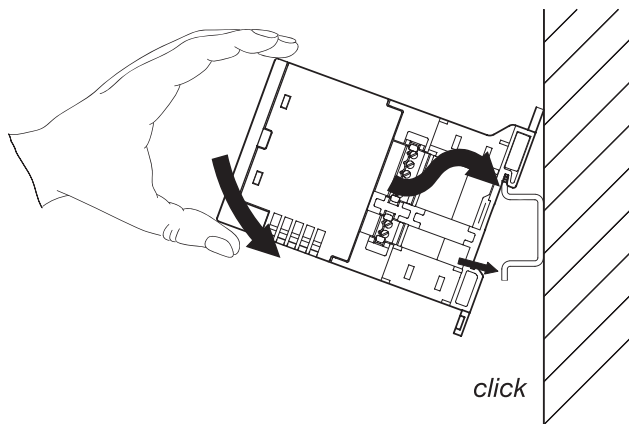
Mounting the DNP31.0 remotely from the UMC100.3

When the communication interface is installed remotely from the UMC100.3 - e.g. in the cable chamber of a motor control center - the DNP31.0 must be supplied separately. This makes it possible to keep the DNP31.0 online even in the case when the drawer is removed. Ready-made cables are available, but it is also possible to use own cables. For more details see section "Using DNP31.0 in a drawout system".

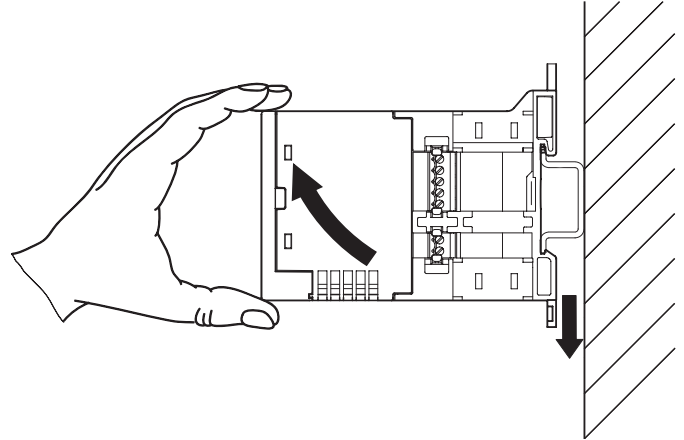
Mounting and dismounting

The single mounting kit (SMK3.0) can be either mounted on a DIN rail hat or fixed with screws on a fitting panel.

Mounting



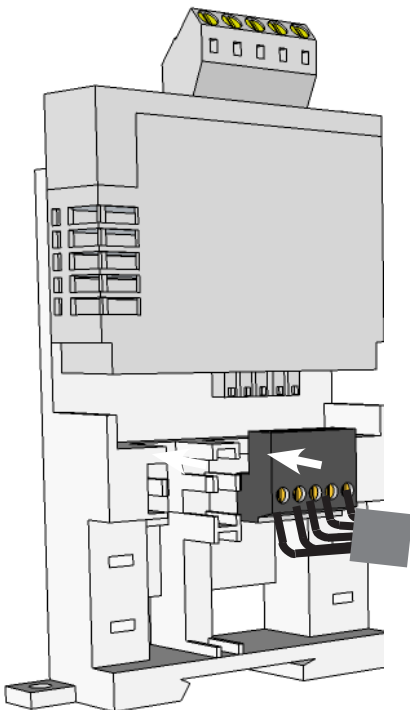
Dismounting



Mounting the DNP31.0 on the single mounting kit

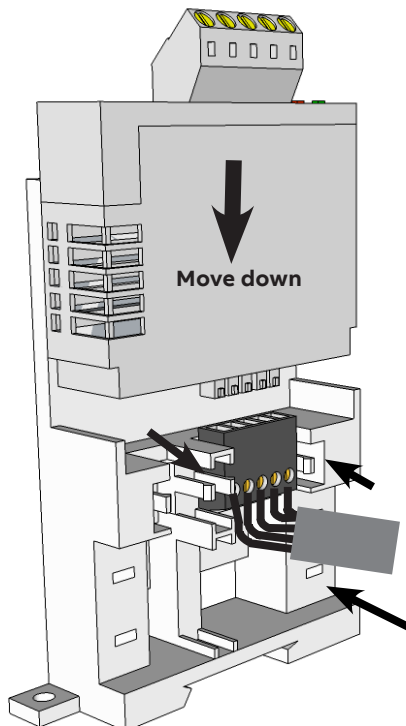
Step 1:

Plug in the communication connectors.



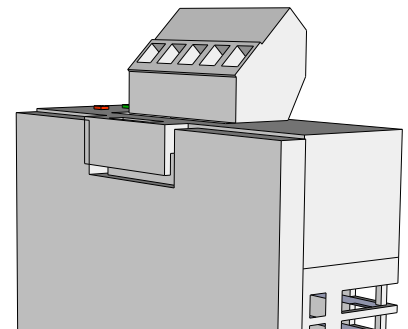
Step 2:

Move down the DNP31.0



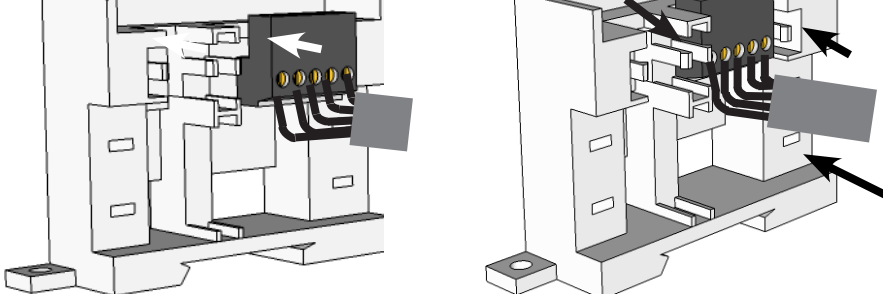
Step 3:

Move down the DNP31.0 until snapped in



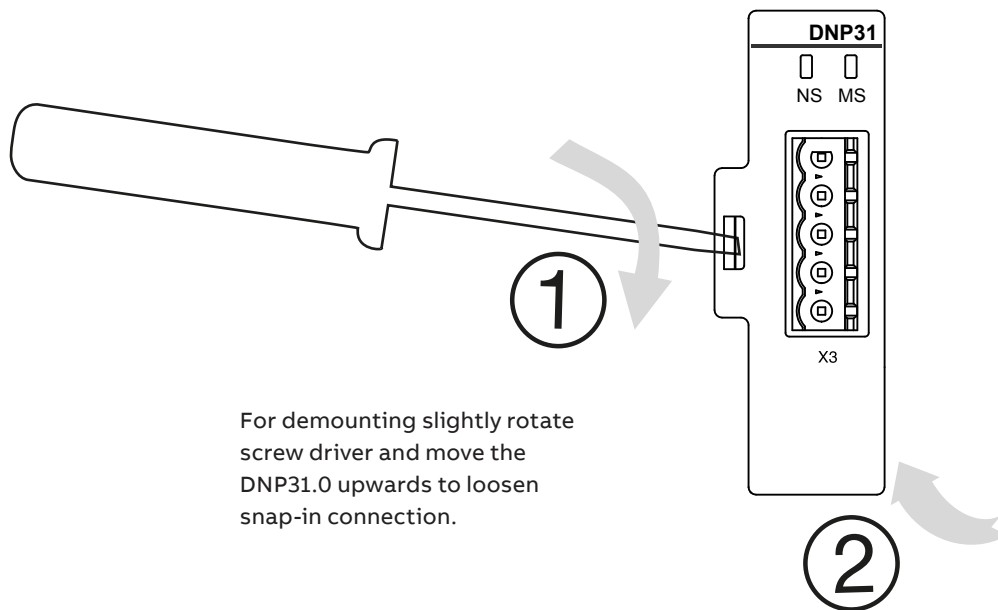
Step 4:

Fix cable with cable ties



Demounting the DNP31.0

Follow the shown procedure for demounting the DNP31.0 from UMC100.3 or SMK.3.



Electrical installation

DeviceNet connection

Connect DeviceNet to X3.

General cabling instructions

- Arrange the bus cables as far away from the motor cables as possible.
- Avoid parallel runs
- Use bushings at cable entries

Bus termination

Bus termination is required to prevent signal reflections from the bus cable ends. The DNP31.0 DeviceNet interface module is not equipped with internal bus termination



The DeviceNet network should be terminated at both ends of the trunk cable with a 121 ohm, ¼ W, 1% Metal film resistor. Connect this resistor between the two signal wires (CAN_H, CAN_L) on the DeviceNet cable.

Setting the communication parameters

The DeviceNet interface module does not provide means to adjust the DeviceNet slave address and baud rate (incl. autobaud). The DeviceNet slave address and baudrate can be set in the UMC100.3 and are copied to the DeviceNet interface module during initial connection between UMC and DNP31.0. When changing communication parameters later on perform a power cycle. The baudrate is set to 'autobaud' by default.

Network and baudrates

The maximum length of trunk cable depends on the data rate and on the type of the cable used.

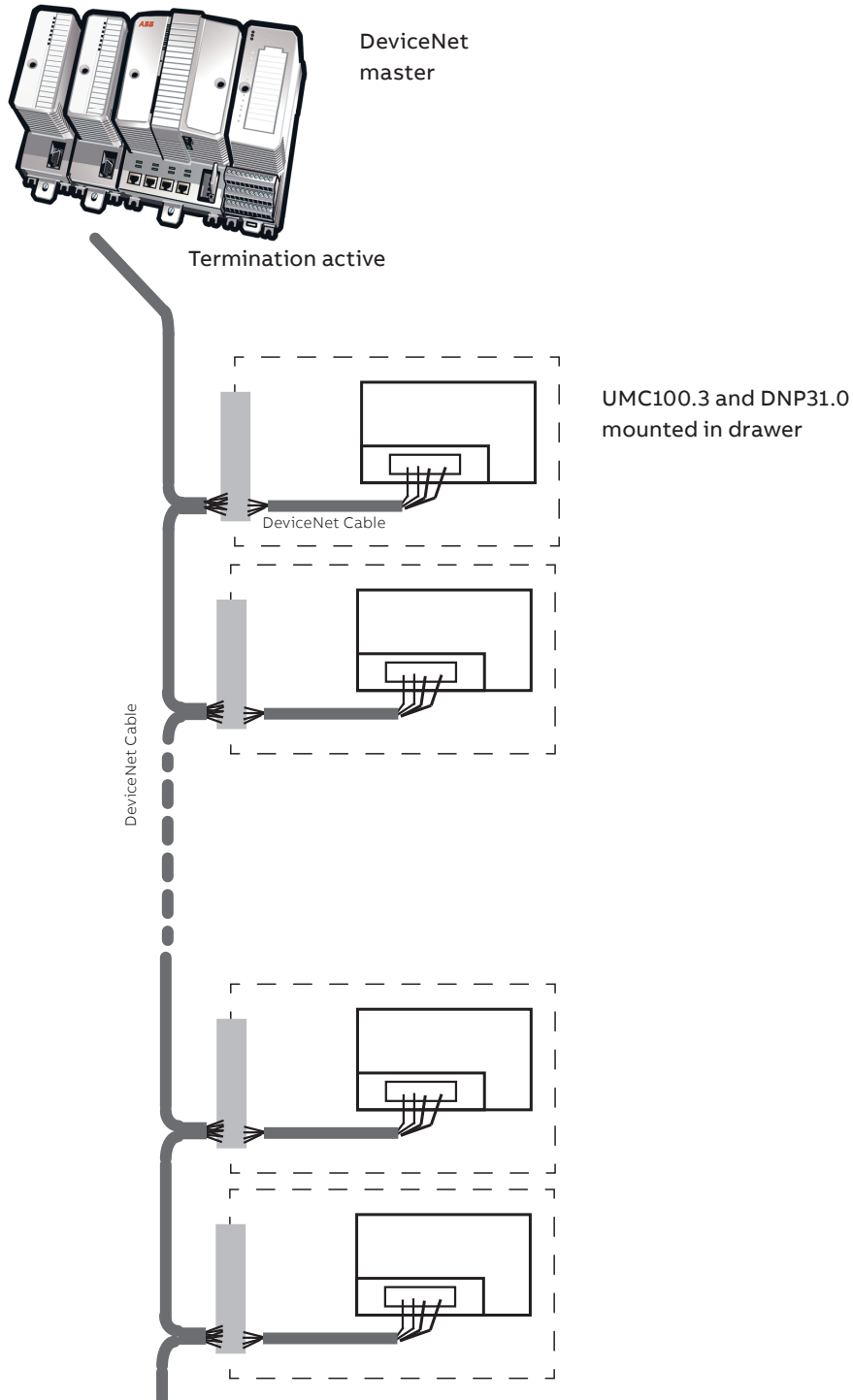
- DeviceNet Cables: YR-29790 (Thick DeviceNet Cable) or YR-29832 (Thin DeviceNet Cable)
- Maximum bus length: 1200 m
- Topology: Multi-drop
- Serial communication type: Asynchronous, half duplex
- Transfer rate: 125, 250 or 500 kbit/s

DeviceNet line with DNP31.0 directly connected to UMC100.3 in a drawout system

The following figure shows a simplified diagram on how to connect the UMC100.3 to a DeviceNet network. Required grounding of the DeviceNet cable is not shown in this figure.



Ground wire and cable shield should be connected to prevent common mode voltage between the network devices from drifting outside the allowable limits.



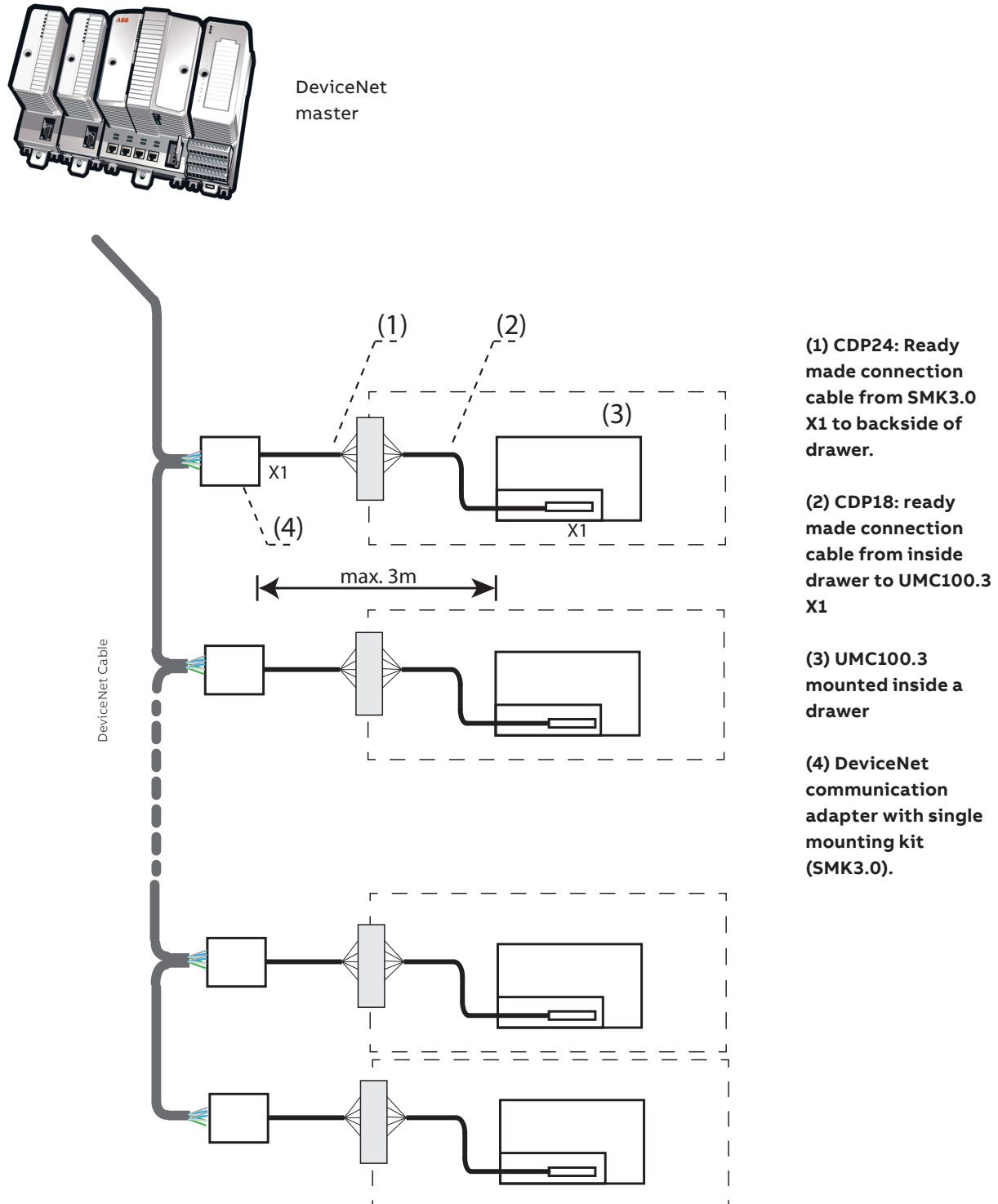
DeviceNet line with DNP31.0 mounted outside a drawer using single mounting kit (SMK3.0)

The following figure shows a simplified diagram on how to connect the UMC100.3 to a DeviceNet network if the UMC100.3 is inside a drawer and the DeviceNet communication interface is mounted outside the drawer e.g. in the cable compartment.

In drawout systems this solution has several benefits:

- DeviceNet address is stored in the DNP31 communication interface in addition to the UMC100. In case of a drawer replacement the new - not addressed - UMC100.3 takes over the bus address automatically.
- Swapping of drawers detected if "Address Check" in UMC100.3 enabled. I.e. it is not possible to accidentally start the wrong motor because of swapped drawer.

Required grounding of the DeviceNet cable is not shown in this figure.



Diagnosis

Diagnosis and behavior in case of an error

The DNP31.0 module provides diagnosis information about the status of the connected device (i.e. UMC100.3), its own status and the status of the DeviceNet connection. Diagnosis information is shown:

- with the locally available LEDs and
- via DeviceNet services.

Diagnosis information is locally displayed using LEDs located on the front side of the DeviceNet interface.

| NS LED (red, green) | MS LED (red, green) | Meaning |
|---------------------|---------------------|--|
| Off | Off | Power supply missing |
| Green flashing | | Online, but not yet listed in scan list |
| Red flashing | | I/O connection in timeout state |
| Red | | Critical connection error, no communication, e.g. address used twice, bus switched off |
| Green | | Online and listed in scan list |
| | Green flashing | Waiting for communication to device (UMC100.3) |
| | Green | Module is working correctly |
| | Red flashing | Communication timeout on link to device (UMC100.3) |
| | Red | Unrecoverable module error, module replacement possibly required |

Checklist

In case of trouble use the following checklist to track down the problem:

DeviceNet

- Are the termination resistors placed at the end of the line?
- Is the line polarity correct?
- Are the lines by accident swapped?
- Is the maximum line length exceeded?

DeviceNet parameters

- Is the baud rate correct?
- Is the slave address correct?
- Are there two devices with the same address in the system?
- Power supply turned on?

DeviceNet master

- Is the correct EDS file used

DeviceNet information about the properties of the DNP31.0

General information

The DNP31.0 operates as a slave on the DeviceNet network. The unit supports explicit messages and polled connection as well as COS/Cyclic I/O messages of the predefined master/ slave connection set. It does not support the Unconnected Message Manager (UCMM).

The number of inputs and outputs supported by the DNP31.0 depends on the device which is connected (as of writing UMC100.3 only).

Message types

As a group 2 only slave device, the DNP31.0 supports the following message types.

| CAN Identifier | Group 2 message type |
|----------------|--------------------------------------|
| 10xxxxxx111 | Duplicate MAC ID check messages |
| 10xxxxxx110 | Unconnected explicit request message |
| 10xxxxxx101 | Master I/O poll command message |
| 10xxxxxx100 | Master explicit request message |

xxxxxx = Node address

Class services

As a group 2 only slave device, the DNP31.0 supports the following class services and instance services.

| Service code | Service name |
|--------------|---------------------------------|
| 14 (0x0E) | Get attribute single |
| 16 (0x10) | Set attribute single |
| 75 (0x4B) | Allocate group 2 Identifier set |
| 76 (0x4C) | Release group 2 Identifier set |

Object classes

The DNP31.0 supports the following DeviceNet classes.

| Class | Object |
|------------|-------------------------------|
| 001 (0x01) | Identity |
| 002 (0x02) | Message router |
| 003 (0x03) | DeviceNet |
| 004 (0x04) | Assembly |
| 005 (0x05) | Connection |
| 043 (0x2B) | Acknowledge handler |
| 100 (0x64) | ABB discrete input |
| 101 (0x65) | ABB discrete output |
| 102 (0x66) | ABB analog input |
| 103 (0x67) | ABB analog output |
| 105 (0x69) | ABB parameter |
| 112 (0x70) | ABB parameter modular devices |
| 118 (0x76) | ABB any data |
| 128 (0x80) | ABB query |

Class code 001 (0x01): Identity object

The identity object is required on all devices and provides identification of and general information about the device. Only one instance (0x01) is supported.

Class attributes

None

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|--|--------------------------------------|--------------|
| 1 | Get | Vendor | UINT | 760 (0x2F8) |
| 2 | Get | Product type | UINT | 12 (0xC) |
| 3 | Get | Product code | UINT | *1) |
| 4 | Get | Revision Major revision Minor revision | STRUCT OF USINT USINT | 1 3 |
| 5 | Get | Device status | UINT | *2) |
| 6 | Get | Serial number | UINT | unique |
| 7 | Get | Product name Length Name | STRUCT OF USINT STRING[Length] | 7 General |

*1) The product code is obtained from the device connected to the DNP31.

*2) Device status

| | | |
|--------|------|---------------------|
| byte 0 | 0x00 | not owned |
| | 0x01 | owned (allocated) |
| byte 1 | 0x00 | no fault |
| | 0x04 | recoverable fault |
| | 0x08 | unrecoverable fault |

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 05 (0x05) | No | Yes | Reset |
| 14 (0x0E) | No | Yes | Get_Attribute_Single |

Class code 002 (0x02): Message router object

The message router object provides a messaging connection point through which a client may address a service to any object class or instance residing in the physical device.

Class attributes

None

Instance attributes

None

Common services

None

Class code 004 (0x04): Assembly object

The assembly objects bind attributes of multiple objects to allow data to or from each object to be sent or received over a single connection.

Class attributes

None

Instance attributes

Assembly object, instance 100, attributes

| Attribute | Access | Name | Type | Value |
|-----------|---------|----------------|-------------------|-------|
| 3 | Get/Set | Producing data | ARRAY OF [n] BYTE | *1) |

*1) The size of the data array depends on the Produced Data size of the device connected to the DNP31.

Assembly object, instance 101, attributes

| Attribute | Access | Name | Type | Value |
|-----------|---------|----------------|-------------------|-------|
| 3 | Get/Set | Consuming data | ARRAY OF [n] BYTE | *1) |

*1) The size of the data array depends on the Consumed Data size of the device connected to the DNP31. For detailed information, please refer to the device manual.

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | Yes | Yes | Get_Attribute_Single |
| 16 (0x10) | No | Yes | Set_Attribute_Single |

Class code 005 (0x05): Connection object

The connection class allocates and manages the internal resources associated with both I/O and explicit messaging connections. The specific instance generated by the connection class is referred to as a connection instance or a connection object.

Three instances of the connection class will be supported. Instance 1 will be the explicit message connection, instance 2 will be the polled I/O connection, and instance 4 will be the COS/Cyclic IO connection.

Class attributes

None

Instance attributes

Connection object, instance 1 = Explicit message connection, attributes

| Attribute | Access | Name | Type | Value |
|-----------|---------|-------------------------------|-------|----------------------------------|
| 1 | Get | State | USINT | *1) |
| 2 | Get | Instance type | USINT | 0 = Explicit Message |
| 3 | Get | Transport class trigger | BYTE | 0x83 - Server, Transport Class 3 |
| 4 | Get | Produced connection ID | UINT | 10xxxxxx011 *2) |
| 5 | Get | Consumed connection ID | UINT | 10xxxxxx100 *2) |
| 6 | Get | Initial comm. characteristics | BYTE | 0x21 |
| 7 | Get | Produced connection size | UINT | *3) |
| 8 | Get | Consumed connection size | UINT | *3) |
| 9 | Get/Set | Expected packet rate | UINT | in ms |
| 12 (0x0C) | Get/Set | Watchdog timeout action | USINT | 01 = auto delete |
| 13 (0x0D) | Get | Produced conn. path length | UINT | 0 |
| 14 (0x0E) | Get | Produced connection path | EPATH | Empty |
| 15 (0x0F) | Get | Consumed conn. path length | UINT | 0 |
| 16 (0x10) | Get | Consumed connection path | EPATH | Empty |
| 17 (0x11) | Get | Production inhibit time | UINT | 0 |

*1) Connection state

| | |
|---|------------------------|
| 0 | nonexistent |
| 1 | configuring |
| 2 | wait for connection ID |
| 3 | established |
| 4 | timed out |
| 5 | deferred |

*2) xxxxxx = node address

*3) The size of Produced and Consumed Connection depends on the device connected to the DNP31.0 (as of writing UMC100.3). For detailed information, please refer to the device manual.

Connection object, Instance 2 = Polled I/O message connection, attributes

| Attribute | Access | Name | Type | Value |
|-----------|---------|-------------------------------|-------|--------------------------------------|
| 1 | Get | State | USINT | *1) |
| 2 | Get | Instance type | USINT | 1 = I/O Connection |
| 3 | Get | Transport class trigger | BYTE | 0x82 - Server, Transport Class 2 *4) |
| 4 | Get | Produced connection ID | UINT | 01111xxxxxx *2) |
| 5 | Get | Consumed connection ID | UINT | 10xxxxxx101 *2) |
| 6 | Get | Initial comm. characteristics | BYTE | 0x01 |
| 7 | Get | Produced connection size | UINT | *3) |
| 8 | Get | Consumed connection size | UINT | *3) |
| 9 | Get/Set | Expected packet rate | UINT | in ms |
| 12 (0x0C) | Get | Watchdog timeout action | USINT | 0 = time out |
| 13 (0x0D) | Get | Produced conn. path length | UINT | 6 |
| 14 (0x0E) | Get | Produced connection path | EPATH | 20 04 24 64 30 03 |
| 15 (0x0F) | Get | Consumed conn. path Length | UINT | 6 |
| 16 (0x10) | Get | Consumed connection path | EPATH | 20 04 24 65 30 03 |
| 17 (0x11) | Get | Production inhibit time | UINT | 0 |

*1) Connection state

| | |
|---|------------------------|
| 0 | nonexistent |
| 1 | configuring |
| 2 | wait for connection ID |
| 3 | established |
| 4 | timed out |
| 5 | deferred |

*2) xxxxxx = node address

*3) The size of Produced and Consumed Connection depends on the device connected to the DNP31.0 (as of writing UMC100.3). For detailed information, please refer to the device manual.

*4) If alloc_choice = polled and ack suppression is enabled then value = 0x80.

Connection object, Instance 4 = COS/Cyclic I/O message connection, attributes

| Attribute | Access | Name | Type | Value |
|-----------|---------|-------------------------------|-------|--|
| 1 | Get | State | USINT | *1) |
| 2 | Get | Instance type | USINT | 1 = I/O Connection |
| 3 | Get | Transport class trigger | BYTE | *4) |
| 4 | Get | Produced connection ID | UINT | 01101xxxxxx *2) |
| 5 | Get | Consumed connection ID | UINT | 10xxxxxx101 *2) |
| 6 | Get | Initial comm. characteristics | BYTE | 0x01 (acknowledged) 0x0F (unacknowledged) |
| 7 | Get | Produced connection size | UINT | *3) |
| 8 | Get | Consumed connection size | UINT | *3) |
| 9 | Get/Set | Expected packet rate | UINT | in ms |
| 12 (0x0C) | Get | Watchdog timeout action | USINT | 0 = time out |
| 13 (0x0D) | Get | Produced conn. path Length | UINT | 6 |
| 14 (0x0E) | Get | Produced connection path | EPATH | 20 04 24 64 30 03 |
| 15 (0x0F) | Get | Consumed conn. path Length | UINT | 6 |
| 16 (0x10) | Get | Consumed connection path | EPATH | 20 04 24 65 30 03 |
| 17 (0x11) | Get/Set | Production inhibit time | UINT | in ms |

*1) Connection state

| | |
|---|------------------------|
| 0 | nonexistent |
| 1 | configuring |
| 2 | wait for connection ID |
| 3 | established |
| 4 | timed out |
| 5 | deferred |

*2) xxxxxx = node address

*3) The size of Produced and Consumed Connection depends on the device connected to the DNP31.0 (as of writing UMC100.3). For detailed information, please refer to the device manual.

*4) Transport Class Trigger

| | |
|------|------------------------|
| 0x00 | Cyclic, unacknowledged |
| 0x02 | Cyclic, acknowledged |
| 0x10 | COS, unacknowledged |
| 0x12 | COS, acknowledged |

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 05 (0x05) | No | Yes | Reset |
| 14 (0x0E) | No | Yes | Get_Attribute_Single |
| 16 (0x10) | No | Yes | Set_Attribute_Single |

Class code 043 (0x2B): Acknowledge handler object

The acknowledge handler object is used to manage the reception of message acknowledgements. This object communicates with a message producing application object within a device. The acknowledge handler object notifies the producing application of acknowledge reception, acknowledge timeouts and production retry limit.

Class attributes

None

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|---------|-----------------------------------|-------|-------|
| 1 | Get/Set | Acknowledge timeout | UINT | in ms |
| 2 | Get | Retry limit | USINT | 1 |
| 3 | Get | COS producing connection instance | UINT | 4 |

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | No | Yes | Get_Attribute_Single |
| 16 (0x10) | No | Yes | Set_Attribute_Single |

Class Code 100 (0x64): ABB discrete input object

The ABB discrete input object models the discrete inputs of the device connected to the DNP31. You can use this object in applications as simple as a toggle switch or as complex as a discrete I/O control module. There is a separate instance for each discrete input available on the device.

Class attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|---------------------------|-------|-------|
| 2 | Get | Number of Discrete Inputs | USINT | *1) |

*1) The number of discrete inputs depends on the device connected to the DNP31.0 (as of writing UMC100.3). For detailed information, please refer to the device manual.

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|----------------------|------|-------------|
| 3 | Get | Discrete Input Value | BOOL | Input State |

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | No | Yes | Get_Attribute_Single |

Class code 101 (0x65): ABB discrete output object

The ABB discrete output object models the discrete outputs of the device connected to the DNP31. You can use this object in applications as simple as an actuator or as complex as a discrete I/O control module. There is a separate instance for each discrete output available on the device.

Class attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|----------------------------|-------|-------|
| 2 | Get | Number of discrete outputs | USINT | *1) |

*1) The number of discrete outputs depends on the device connected to the DNP31. For detailed information, please refer to the device manual.

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|---------|-----------------------|------|--------------|
| 3 | Get/Set | Discrete output value | BOOL | Output state |

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | No | Yes | Get_Attribute_Single |
| 16 (0x10) | No | Yes | Set_Attribute_Single |

Class Code 102 (0x66): ABB analog input object

The ABB analog input object models the analog inputs of the device connected to the DNP31.0 (as of writing UMC100.3). There is a separate instance for each analog input available on the device.

Class attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|-------------------------|-------|-------|
| 2 | Get | Number of analog inputs | USINT | *1) |

*1) The number of analog inputs depends on the device connected to the DNP31.0 (as of writing UMC100.3). For detailed information, please refer to the device manual.

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|--------------------|------|-------------|
| 3 | Get | Analog input value | INT | Input state |

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | No | Yes | Get_Attribute_Single |

Class Code 103 (0x67): ABB analog output object

The ABB analog output object models the analog outputs of the device connected to the DNP31.0. There is a separate instance for each analog output available on the device.

Class attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|--------------------------|-------|-------|
| 2 | Get | Number of analog outputs | USINT | *1) |

*1) The number of analog outputs depends on the device connected to the DNP31.0. For detailed information, please refer to the device manual.

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|---------|---------------------|------|--------------|
| 3 | Get/Set | Analog output value | INT | Output state |

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | No | Yes | Get_Attribute_Single |
| 16 (0x10) | No | Yes | Set_Attribute_Single |

Class code 105 (0x69): ABB parameter object

The ABB parameter object provides the parameter for non-modular devices and for the adapter module (slot 0) of modular devices. The index always corresponds to the parameter number. The attribute is fixed to 3. The use of the ABB parameter object provides a known public interface to a device's configuration data. In addition, this object also provides all the information necessary to define and describe each of a device's individual configuration parameters.

This object allows a device to fully identify a configurable parameter by supplying a full description of the parameter, including minimum and maximum values and a human-readable text string describing the parameter. The complete description of an device's parameters (as of writing UMC100.3) can be found in the device manual. Configuration tools obtain the parameter description automatically from the EDS file.

Class attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|--------------------------------------|-------|-------|
| 2 | Get | Number of parameters (Max. instance) | USINT | *1) |

*1) The number of parameters depends on the device connected to the DNP31.0 (as of writing UMC100.3). For detailed information, please refer to the device manual.

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|-------------|-----------------|------|--------------|
| 3 | Get/Set *2) | Parameter value | LINT | Actual value |

*2) The Set service is not available for read-only parameters.

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | No | Yes | Get_Attribute_Single |
| 16 (0x10) | No | Yes | Set_Attribute_Single |

Class code 112 (0x70): ABB parameter modular object

The ABB parameter modular object provides the parameter for **modular** expansion devices which are connected to an adapter module. The index always corresponds to the slot number (beginning with slot 1) and the attribute corresponds to the parameter number of the module plugged into the slot. The use of the ABB parameter modular object provides a known public interface to a device's configuration data. In addition, this object also provides all the information necessary to define and describe each of a device's individual configuration parameters.

This object allows a device to fully identify a configurable parameter by supplying a full description of the parameter, including minimum and maximum values and a human-readable text string describing the parameter. The complete description of a modular device's parameters can be found in the device manual. Configuration tools obtain the parameter description automatically from the EDS file.

Class attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|----------------------------------|-------|-------|
| 2 | Get | Max. number of expansion modules | USINT | 7 |

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|-------------|-----------------|------|--------------|
| 3 | Get/Set *1) | Parameter value | LINT | Actual value |

*1) The Set service is not available for read-only parameters.

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | No | Yes | Get_Attribute_Single |
| 16 (0x10) | No | Yes | Set_Attribute_Single |

Class code 118 (0x76): ABB any data class

The ABB any object can be used to read parameter data and measured values in a compact format. When required details are available on request.

Class code 128 (0x80): ABB query object

The ABB query object provides an array filled with the external IDs of all modules connected to the adapter module. It is used for modular devices only. By means of this object, configuration tools are able to read the module configuration from the DNP31.0.

Class attributes

None

Instance attributes

| Attribute | Access | Name | Type | Value |
|-----------|--------|------------------------|-----------------------|--|
| 1 | Get | Query external ID list | ARRAY [0..7] OF USINT | External IDs of the expansion modules actually connected *1) |

*1) Empty slots are represented by the external ID "00 00".

Common services

| Service code | Class | Instance | Service name |
|--------------|-------|----------|----------------------|
| 14 (0x0E) | No | Yes | Get_Attribute_Single |

Technical data

Data at $T_a = 25\text{ °C}$ and rated values, unless otherwise indicated.

General data

| | |
|---|---|
| Supply voltage | 24 V DC (11...24,7 V DC) according to DeviceNet specification |
| Current consumption | type. 18.5 mA |
| Supported communication protocols | DeviceNet |
| Physical Interface | 2-wire CAN |
| Integrated termination resistors | no |
| Possible bus addresses (set via UMC100) | 0 ... 63 |
| Max. baudrate | 500 kbaud |
| Pollution degree | 3 |
| Degree of protection | IP20 |
| Mounting | UMC100.3 or SMK3.0 |
| Altitude | 4000 m |
| Duty time | 100 % |
| Weight | 0.042 kg |
| Protective separation | no |

Standards / directives

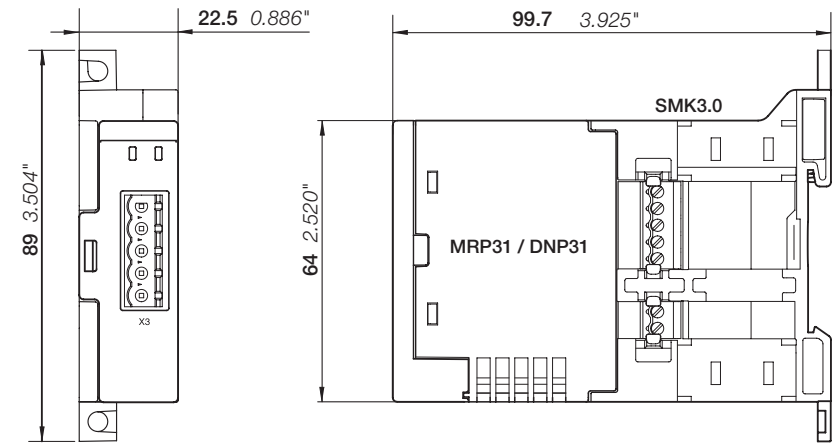
| | |
|------------------|-------------------------|
| Product standard | DeviceNet specification |
| RoHS directive | 2011/65/EU |

Environmental data

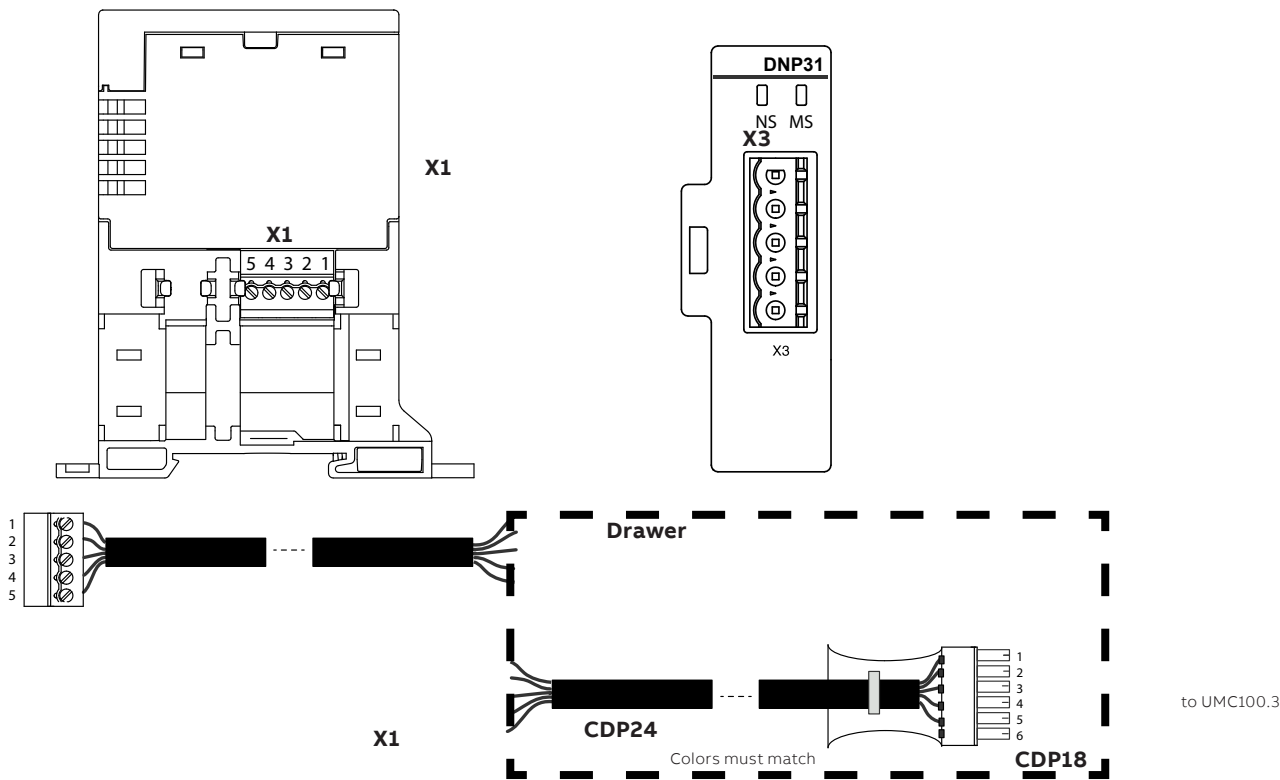
| | | |
|--|-----------|------------------------|
| Ambient air temperature | Operation | 0 ... +60 °C |
| | Storage | -25 ... +70 °C |
| Vibration (sinusoidal) acc. to IEC/EN 60068-2-6 (Fc) | | 0.7 g / 10 150 Hz |
| Shock (half-sine) acc. to IEC/EN 60068-2-27 (Ea) | | 15 g / 11 ms |

Dimensional drawings

Main device



Connection cables



| Pin | Color | Function |
|-----|-------|---------------|
| 5 | Blue | VDD |
| 4 | Brown | VCC |
| 3 | Black | Communication |
| 2 | Grey | Communication |
| 1 | White | Diagnosis |

| Function |
|----------|
| V- |
| CAN_L |
| Screen |
| CAN_H |
| V+ |

Ordering data

| Order code | Type | Description |
|-----------------|--------------|--|
| 1SAJ231000R0001 | DNP31.0 | DeviceNet communication interface |
| 1SAJ929600R0001 | SMK3.0 * | Single mounting kit for separate mounting of the communication interface |
| 1SAJ929180R0015 | CDP18.150 ** | Cable between UMC100.3 and drawer inside, 1.5 m |
| 1SAJ929240R0015 | CDP24.150 ** | Cable between SMK3.0 and drawer outside, 1.5 m |
| 1SAJ929610R0001 | SMK3-X2.10 | Terminal block 2-pol. for SMK3.0 supply, 10 pcs. |
| 1SAJ929620R0001 | SMK3-X1.10 | Terminal block 5-pol. for SMK3.0 communication, 10 pcs. |

* is delivered including terminal block for power supply connection

** ready cables with terminal block on one end and one open end

ABB STOTZ-KONTAKT GmbH

Eppelheimer Straße 82
69123 Heidelberg
Germany

**You can find the address of your local sales organization
on the ABB homepage**



abb.com/lowvoltage

Additional information

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