



NK8000
MP3.20-01

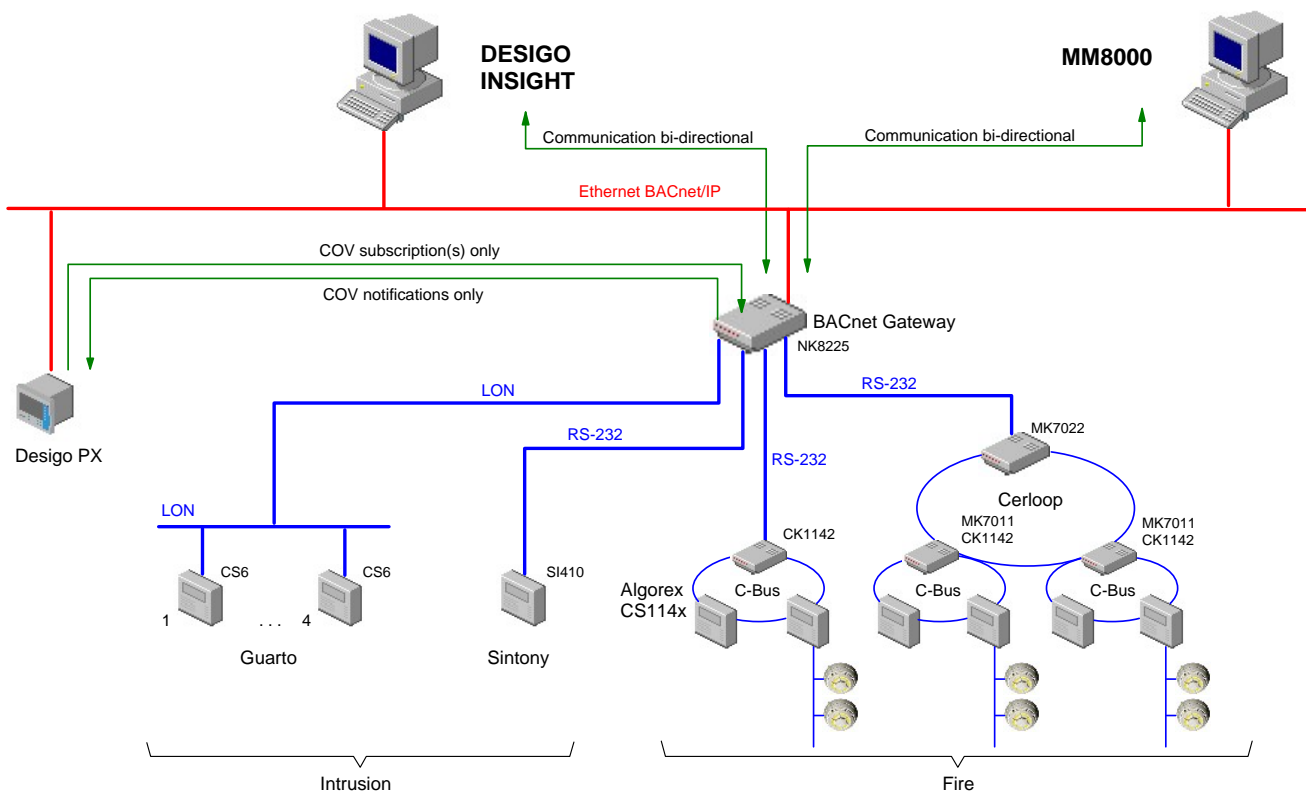
Product Datasheet

NK8225 Ethernet Port with BACnet Gateway

The NK8225 Ethernet Port with BACnet Gateway is used to connect local and distributed safety and security devices to DMS8000 Management Stations, and DESIGO™ building automation and control systems. It provides a first level of centralisation, and converts the native protocols of the safety and security devices to BACnet.

- **Allows to build Total Building Solutions with DMS8000 and DESIGO INSIGHT Management Stations, and DESIGO PX automation units**
- **Provides BACnet connectivity for AlgoRex CS114x fire detection systems, Guarto CS6 and Sintony SI410 intrusion detection systems to the DESIGO building automation and control system**
- **Integrated interaction machine supporting logical combinations between locally connected subsystems**
- **Based on the standards BACnet/IP and Ethernet**
- **NK8225 is based on a flexible, high performance hardware platform, that has been specifically designed for safety and security applications**
- **Supplied in a plastic box, easy to install on DIN-rails**
- **Optional housing solutions with autonomous power supply**

Connectivity



Connectivity example

Upstream connectivity:

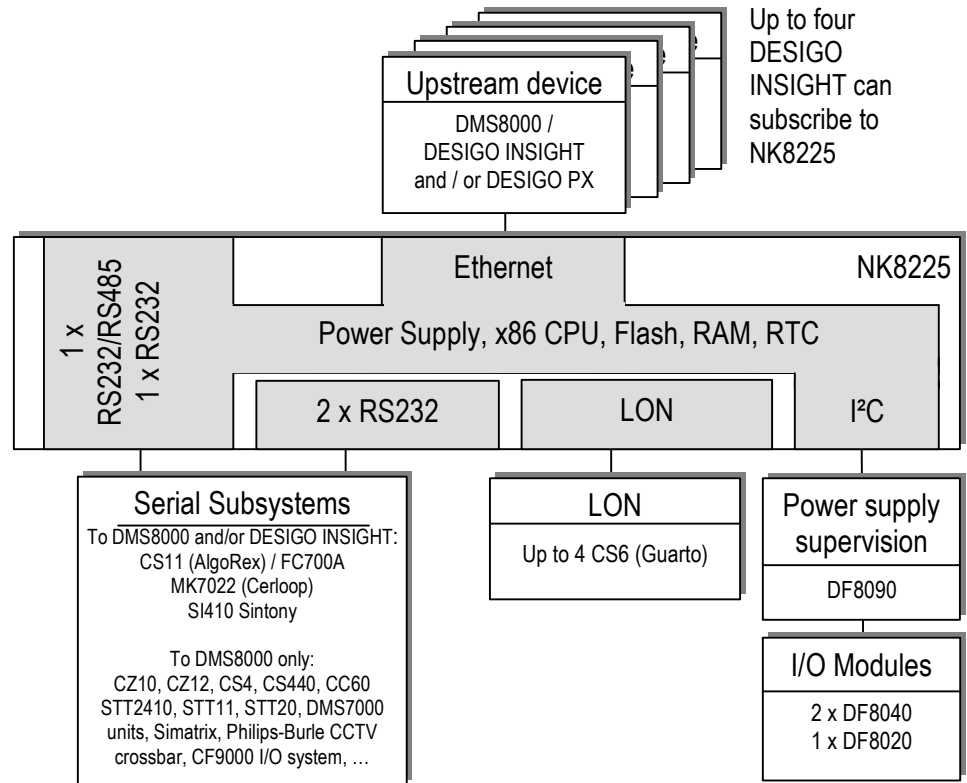
- BACnet/IP on Ethernet connectivity for connection to local and remote management stations (DMS8000 and / or DESIGO INSIGHT);
- Conversion of native protocols (CS114x AlgoRex, CS6 MP3, SI410 Sintony) to BACnet for DESIGO;
- Simultaneous multiple host connectivity (up to four);

Downstream connectivity:

- Up to 4 serial connections supporting fire, gas and intrusion detection systems, and digital I/O's;
- LON adapter for connecting up to 4 CS6 intrusion detection systems;
- Direct support for local digital I/O with up to 16 non-supervised inputs and 8 relay outputs.

→ For application examples, see the DMS8000 Application & Planning guide.

Internal structure



The NK8225 employs industry standard x86 CPUs and PC104 extension boards, and is composed of:

- Base board with power supply, CPU, and basic configuration of interfaces;
- Optional add-on board with 2 RS232 ports;
- Optional PC104 LON board.

The Base board is equipped with:

- Power supply;
- 2 serial interfaces (2 RS232 or 1 RS485 and 1 RS232);
- Ethernet 10Base-T interface;
- DIMM-PC / 520-I module with:
 - 32MB RAM;
 - 32MB Flash disk;
 - Real Time Clock (RTC);
 - Real Time Operating System (RTOS) with integrated IP protocol stack
 - BACnet protocol stack;
- Flash EPROM;
- RAM;
- I²C bus;
- Diagnostic LEDs.

Configuration

Hardware configurations The NK8225 is available in four hardware configurations:

NK8225.2	<hr/> <ul style="list-style-type: none">- 1 Ethernet line for local or remote host- 2 serial lines for subsystems <hr/>
NK8225.4	<hr/> <ul style="list-style-type: none">- 1 Ethernet line for local or remote host- 4 serial lines for subsystems <hr/>
NK8225.CL2	<hr/> <ul style="list-style-type: none">- 1 Ethernet line for local or remote host- 1 LON line for subsystems- 2 serial lines for subsystems <hr/>
NK8225.CL4	<hr/> <ul style="list-style-type: none">- 1 Ethernet line for local or remote host- 1 LON line for subsystems- 4 serial lines for subsystems <hr/>

Further options:

NH8002	<hr/> <ul style="list-style-type: none">- 2 serial port add-on board <hr/>
DF8040 8 input module on I²C bus	<hr/> <ul style="list-style-type: none">- 8 input (non supervised) module for acquiring digital contacts. A max of 2 modules can be directly connected to NK8225. For more connectivity (as well as for supervised inputs), it is necessary to use a CF9003 CPU on one of the serial connections. <hr/>
DF8020 8-output relays module on I²C bus	<hr/> <ul style="list-style-type: none">- 8 output (non supervised) relay module for controlling digital contacts. Only one module can be directly connected to NK8225. For more connectivity, it is necessary to use a CF9003 CPU on one of the serial connections. <hr/>
DF8090 power supply supervision module on I²C bus	<hr/> <ul style="list-style-type: none">- Optional module for supervising the NK8225 power supply and detecting power failures and battery low conditions. It is not needed when NK8225 is installed in a fire or intrusion control unit, whose power supply is already supervised. <hr/>
NE8001	<hr/> <ul style="list-style-type: none">- Wall-mountable, metallic cabinet with DIN-rail, including power supply unit. Input: 100 – 240 Vac.; Output: 12Vdc 4A. <hr/>
NE8002	<hr/> <ul style="list-style-type: none">- Wall-mountable, metallic cabinet with DIN-rail. <hr/>

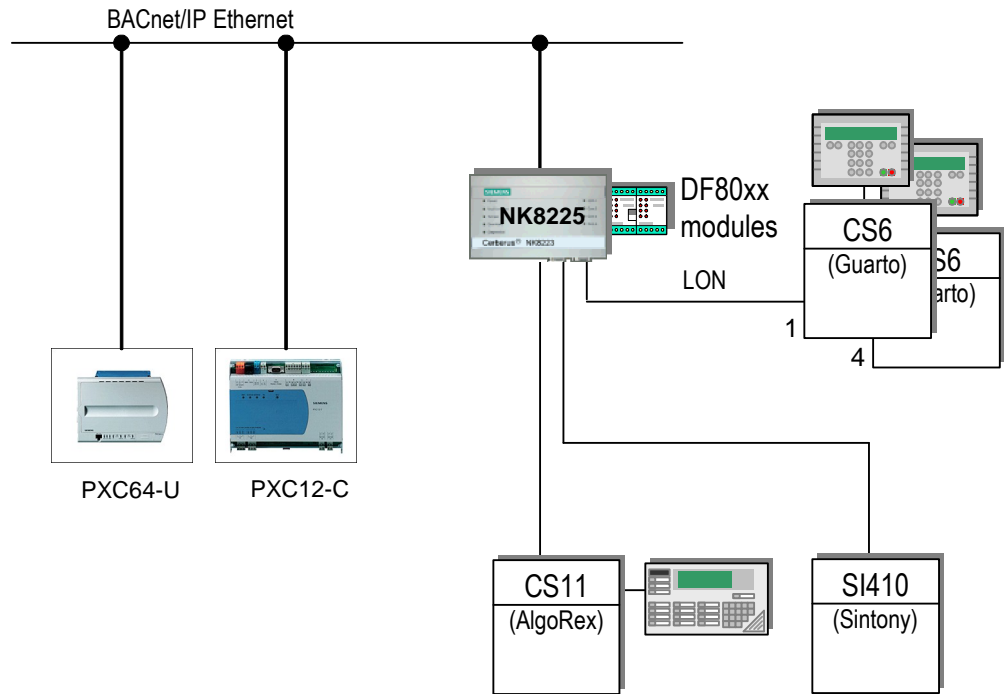
Parameterisation

The NK8225 configuration is part of the Composer tool environment. To perform the SW-configuration for NK8225, a WW8000 Composer license is required.

The configuration tool includes connection parameters, as well as interaction parameters (with AND, OR, XOR, and NOT logic combinations).

Automation level

The following figure shows that information from the fire safety- and security systems can be used in DESIGO PX automation stations for the programming of controls. A typical application is the control of ventilation in case of a fire.



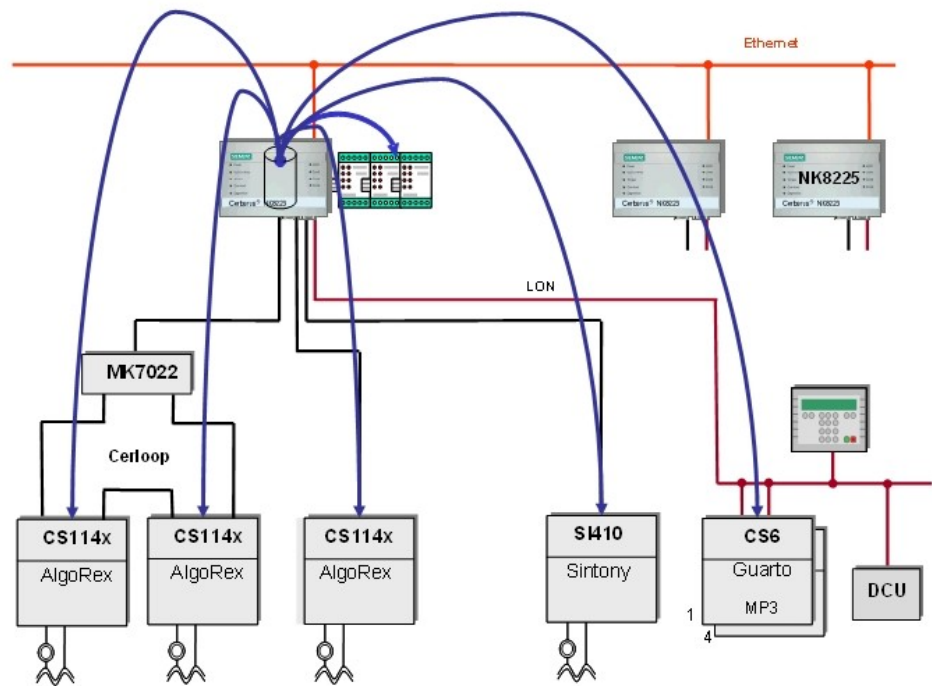
Example of TBS with DESIGO PX automation stations

Interactions

Interactions are possible between the subsystems connected directly to NK8225 and the locally connected I/O modules. Incoming messages can trigger one or more command messages to other subsystems.

Note: Incoming messages can be combined with the logical operators AND, OR, XOR, and NOT.

The configuration is done via an easy to use interactions tool, and then downloaded to the NK8225.



Local interactions on NK8225

DF8090 Power supply supervision module

DF8090 is an optional, external module, which can be installed on the I²C bus for monitoring the NK8225 power supply. It detects the following conditions, shown on the DF8090 local panel (LEDs), and reported to NK8225 via I²C:

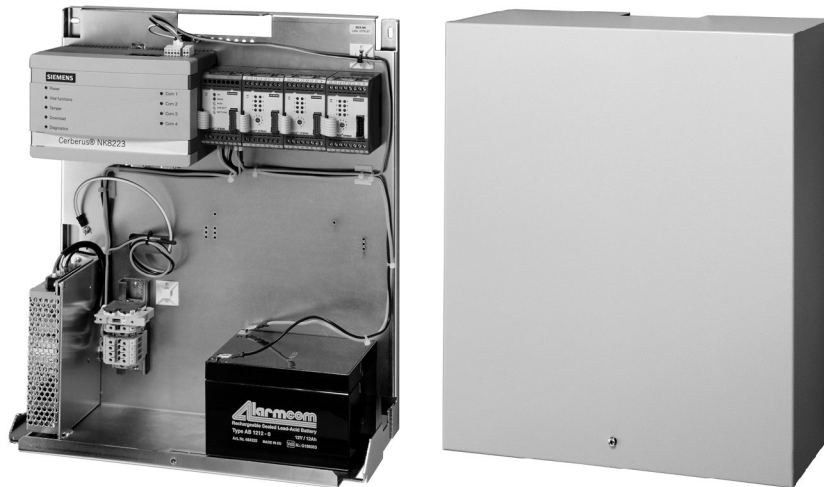
- Mains power failure;
- Battery low;
- Power supply failure;
- Battery protection fuse blown.

DF8090 can be installed on the DIN-rail, next to the NK8225.

Housing solutions for NK8225

NE8001 and NE8002 are compact and convenient housing solutions for NK8225 units:

- NE8001 - Metallic cabinet for easy wall-mounting, including a DIN rail and a pre-wired power supply for NK8225 and local I/O;
- NE8002 - The sole metallic cabinet.



NE8001 housing equipped with NK8225 and I/O modules

Connectivity NK8225 Ethernet Port with BACnet Gateway

Management Systems	Ethernet	- DESIGO INSIGHT management station (V2.35 SP2)
Automation Stations	Ethernet	- DESIGO PX automation stations (V2.36)
Subsystems	4 RS232 lines (3 if RS485 line is used)	- 1 subsystem, 1 C-Bus network or 1 Cerloop network (via MK7022) per line
	LON line	- Up to 4 CS6 MP3 Guarto units
	I ² C bus	- 1 Power Supply Supervision Module (1 DF8090) - 8 or 16 non supervised digital inputs (1 or 2 DF8040) - 8 non supervised digital relay output (1 DF8020)

Technical data NK8225 Ethernet Port with BACnet Gateway

Lines to local host	<ul style="list-style-type: none"> 1 RS232 line – Transport protocol: CMSDL – Host (single host only): <ul style="list-style-type: none"> – MM8000 or MK8000 equipped with NS8012 CDI-Net Driver – MT8001 	Up to 9600 baud
Lines to remote host(s)	<ul style="list-style-type: none"> 1 Ethernet IEEE 802.3, 10Base-T – Transport protocol: BACnet/IP – Hosts (up to four): <ul style="list-style-type: none"> – MM8000 and/or MK8000 (equipped with NS8011 Network Driver) – DESIGO INSIGHT – BACnet gateway for: CS114x AlgoRex, CS6 MP3, SI410 Sintony – Transport protocol: CEI 79-5B – Host (single host only): <ul style="list-style-type: none"> – MM8000 or MK8000, equipped with NS8210 Network Driver (supporting up to 100 NK822x) – FEAL 64-bit encryption – Transport protocol: CMSDL/IP – Hosts (up to four): <ul style="list-style-type: none"> – MM8000 and/or MK8000, equipped with NS8210 Network Driver (supporting up to 100 NK822x) 	10Mbit/sec
Lines to subsystems	<p>LON line and 2/4 RS232 lines, protocol and baud rate options configured by NK8000- configuration tool (Composer):</p> <ul style="list-style-type: none"> – CNAP protocol (CS6 MP3) – Cerban protocol (CS114x EP5 and EP7F, CZ10, CZ12, CS4, CS440, CC60) – Sintony serial link protocol (SI410) – ISO1745 protocol (Connection to Cerloop via MK7022: CS114x EP5 and EP7F, CZ10, CZ12, CS4, CS440, CC60, STT2410, STT11, STT20, DMS7000 units) – ISO1745 direct protocol (CS114x, FC700A) – CMXDL protocol (CF9003) – Burle protocol (Philips-Burle) – CDDL/CDSF (Siemens Simatrix) – CDDL/CDSF (other control units) – VBF (D100, SIGMASYS) 	<p>LON: 78Kbit/sec</p> <p>RS232: 300 or 600 baud</p> <p>RS232: 9600 baud</p> <p>RS232: 1200 or 2400 baud</p> <p>RS232: 1200 or 2400 baud</p> <p>RS485: 9600 baud</p> <p>RS232: up to 9600 baud</p> <p>RS232: 2400 baud</p> <p>RS232: up to 9600 baud</p> <p>RS232 4800, 9600 baud</p>
Interactions	<p>Programmable interaction programs including single or multiple triggers (incoming events) and single or multiple effects (outgoing control actions). Interactions are possible between locally connected subsystems.</p> <ul style="list-style-type: none"> – Subsystems supported: CS114x AlgoRex, CS6 MP3, SI410 Sintony, CF9000, Philips-Burle SIGMASYS, D100 – Logical combinations: AND, OR, XOR, NOT – Delay of effects (wait): configurable 0...6500 sec. – Max. # of interactions: 1000 – Total # of field points used in triggers/effects: 5000 – Max. # of field points/interactions that can be combined in a trigger expression: 255 	
Connectors	<ul style="list-style-type: none"> – D-Sub 9 pin, female type (for serial and modem lines) – RJ-45 connector for Ethernet – Wieland 5-pin connector for power supply and LON 	
Cables	<ul style="list-style-type: none"> – RS232 lines: two unshielded twisted pairs – LON line: one unshielded twisted pair 	<p>Cat.3 UTP, max. 15 m</p> <p>Cat.4 UTP, 22AWG</p> <p>Max 500 m (free topology)</p> <p>Max 1400 m (doubly terminated bus topology)</p>

Detailed specifications for LON network:
<http://www.echelon.com/support/documentation/Manuals/078-0156-01G.pdf>
 Section: System Performance and Cable Selection

Power supply requirements	- Input voltage (DC power supply to NK8225 board)	10-33 Vdc
	- Power (NK8225 processor board)	6,34 W
	- Power (fully equipped NK8225)	8,34 W
	- NE8001	100-240 Vac, 50/60Hz
Operating conditions	- Temperature range	0 to 50 °C
	- Humidity	10 to 95 % non condensing
Dimensions	- NK8225 boards	W x H [mm] 160 x 100 (Euro-size PCB)
	- NK8225 plastic cabinet for DIN-rail	W x H x D [mm] 180 x 108* x 80
	- NK8225 in NE8001 / wall-mounted	W x H x D [mm] 385 x 450 x 150
		*Excluding connectors
Weight	- NK8225 boards	0,35 kg
	- NK8225 plastic cabinet for DIN-rail	0,7 kg (fully equipped)
	- NK8225 in NE8001	8,5 kg (fully equipped)
Digital Input	DF8040 8xInput Module (max 2 modules)	Optical coupler Inputs Max 30Vdc
Digital Output	DF8020 8xOutput Module (1 module)	Relay contacts (NO or NC) Max 1A at 30 Vdc Relay lifetime: 100'000 cycles
Power Supply Supervision Module	DF8090 Power Supply Supervision Module	Supervision of power supply and battery backup
Regulatory Approvals (CE conformity)	EN 55022	EMC emission
	EN 50130-4	EMC immunity
	EN 60950-1	LVD (NK822x installed in NE8001)

Disposal



This device includes electrical and electronic components and must not be disposed of as domestic waste. **Current local legislation must be observed.**

Technical data DF8090 Power Supply Supervision Module

DF8090	Power Supply Supervision Module	
	- Mains failure: 220 Vac missing	Battery fuse is internal to DF8090 plastic box
	- Battery low	Micro-fuse type: MSF 3.15A/250V
	- Power supply failure: trouble in AC/DC converter	
	- Battery protection fuse blown	
	- Battery: 12V, max 27 Ah	

Technical data housings

NE8001	Wall-mountable, metallic cabinet with DIN-rail support and power supply for NK8225 units	<p>The unit includes the following pre-wired units:</p> <ul style="list-style-type: none"> ● Power supply: <ul style="list-style-type: none"> – Input: 100 – 240 Vac / 50-60 Hz 2A / fuse F3.15AL / 250V / 3-pole screw connector – Output: 12Vdc 4A / two 2-pole screw connectors ● Power supply supervision: 1x DF8090 module <p>NE8001 can provide support for the following units (not included):</p> <ul style="list-style-type: none"> ● 1x NK8225 ● 2x DF8040 modules (connected via I²C) ● 1x DF8020 module (connected via I²C) ● Battery: Max 27 Ah Recommended: FIAMM-65 mod. FG22703 (www.fiamm-gs.com) ● B3P020 392653 Mains filter 250 Vac 6A ● Z31041 496290 surge protector set 230 Vac
NE8002	Wall-mountable, metallic cabinet with DIN-rail support	<p>NE8002 can provide support for the following units (not included):</p> <ul style="list-style-type: none"> ● AC/DC Power supply unit ● 1x NK8225 ● 1x DF8090 module ● 2x DF8040 modules (connected via I²C) ● 1x DF8020 module (connected via I²C) ● Battery: Max. 27 Ah Recommended: FIAMM-65 mod. FG22703 (www.fiamm-gs.com) ● B3P020 392653 Mains filter 250 Vac 6A ● Z31041 496290 surge protector set 230 Vac
Dimensions	NE8001/NE8002	W x H x D [mm] 390 x 450 x 150
Colour	NE8001/NE8002	RAL7035 light grey
Enclosure, degree of protection	NE8001/NE8002	Standard IP-42 (as S3G300 standard Quarto housing).
Environmental limits	NE8001/NE8002	Transportation/storage: -40 to +55 °C Use: 10 to +50 °C Humidity 10 to 95%, non condensing
Weight	NE8002 cabinet only NE8001 cabinet with power supply NE8001 + with NK8225 (fully equipped)	6,2 Kg 7,3 Kg 8,5 Kg

Related Products

Note: See Sales and Technical documentation for product-specific details.

MM8000	Management station
MK8000	OPC Server
MT8001	Management terminal
DESIGO INSIGHT	Management station
DESIGO PX	Automation stations
NS8210	Network Driver (MM8000, MK8000)
NS8012	CDI-Net Driver (MM8000, MK8000, MT8001)
WW8000	Composer
CF9000 I/O System	Input/Output Multiplexing System (for I/O modules DF8020, DF8040, DF8045, DF8046)

Details for ordering

NK8225		BACnet Gateways MP3.18	
A6E600303	NK8225.2	Base module	– 1 Ethernet line for remote host – 2 serial lines for subsystems
A6E600304	NK8225.4	Base module	– 1 Ethernet line for remote host – 4 serial lines for subsystems
A6E600305	NK8225.CL2	Base module + LON extension	– 1 Ethernet line for remote host – 1 LON line for subsystems – 2 serial lines for subsystems
A6E600306	NK8225.CL4	Base module + LON extension	– 1 Ethernet line for remote host – 1 LON line for subsystems – 4 serial lines for subsystems
		NK822x HW Accessories	
A6E600066	NE8001	Wall-mountable, metallic cabinet with DIN-rail	The unit includes a pre-wired power supply unit Input: 220Vac; output: 12Vdc 3A
A6E600067	NE8002	Wall-mountable, metallic cabinet with DIN-rail	Cabinet only: 385(W) x 450(H) x 140(D) mm; RAL7035 light grey; IP-42 (as S3G300 standard Quarto housing)
A6E600010	DF8090	Power supply supervision module	Supervision of power supply and battery backup
A6E600013	NH8002	2 serial port add-on board	
A6E600014	NH8010	NK822x/MT8001 PC 104 LON board	
A6E600185	NZ8201	NK822x Mounting kit for CS114x	
A6E600186	NZ8202	NK822x Mounting kit for CS6	
A6E600187	NZ8203	NK822x Mounting kit for SI410	Cable for connecting SI410 to NK822x must be ordered separately from the intrusion product range (80064100001 SAQ18 Cable link X25 SAQ18).
A6E600188	NZ8204	NK822x power supply cable set	
A6E600189	NZ8205	NK822x serial link cable (DB9/m)	
		NK80xx HW Accessories	
5428430001	NK8020	LON repeater	
		DF8000 – I/O Products	
A6E600195	DF8020	8-output module	
A6E600194	DF8040	8-input module	

Note: WW8000 Composer and all necessary NK8000 configuration tools are included in the DMS8000 MP3.20 product CD.

Sales and Technical documentation

Type	Doc. no	Designation
Product Datasheet (Sales)		
- NK8222	007780	Ethernet Port for a single subsystem
- NK8223	007777	Ethernet Port
- NK8225	009417	PICS
- MM8000	006882	Management Station
- MK8000	004968	OPC Server
- MT8001	006952	Management Terminal
- WW8000	003331	Composer
- CF9000 I/O System	001761, 001762	Input/Output Multiplexing System (for I/O modules DF8020, DF8040, DF8045, DF8046)
Application & Planning (Sales)	008084	DMS8000 Application & Planning Guide
Installation, Configuration & Commissioning (Technical)	007798	NK8000 Installation, Configuration & Commissioning Guide
Connectivity Configuration (Technical)	007083	DMS8000 Network, Fire & Intrusion Configuration Guide
	009424	DMS8000 Access Control Configuration Guide
	009425	DMS8000 Video Configuration Guide

Siemens Switzerland Ltd
Building Technologies Group
International Headquarters
Fire Safety & Security Products
Gubelstrasse 22
CH-6301 Zug
Tel +41 41 724 24 24
Fax +41 41 724 35 22
www.sbt.siemens.com

© 2006 Copyright by
Siemens Switzerland Ltd
Data and design subject to change without notice.
Supply subject to availability.