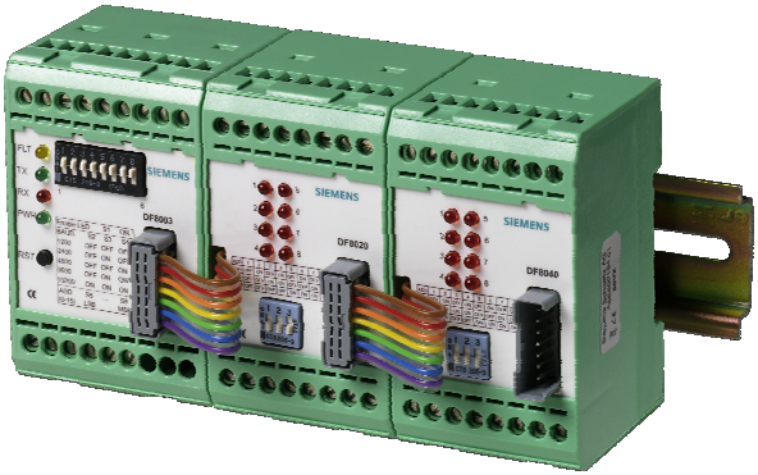
SIEMENS



DF8000
MP4.x

Product Datasheet

Input / Output Multiplexing System

Flexible Input/Output system designed for easy and cost-effective integration of devices in DMS8000

- **Flexible I/O system designed for easy and cost-effective integration of a large spectrum of devices in a safety / security supervising centre**
- **DIN rail-mounted modules**
- **Architectures based on modular units supporting from 4 to 48 input/output points**
- **Multiple units can be distributed over a RS485 bus**
- **Local I/O for NK8000 Ethernet Port gateways**
- **Binary (ACTIVE/INACTIVE) and supervised (ALARM/TAMPER) inputs**
- **Relay outputs**
- **11...33 VDC power supply, separated between internal and external circuits**
- **Power supervision module for NK8000**
- **One-to-one replacement of previous CF9000 family**

Building Technologies

Fire Safety & Security Products

Summary

DF8000 is a flexible I/O system designed for easy and cost-effective integration of a large spectrum of devices in a safety / security supervising centre.

Based on an innovative modular approach, the DF8000 family is made up of DIN rail-mounted modules that can be combined in local units – distributed on RS485 lines – that can concentrate from 4 to 48 I/O points.

Each DF8000 unit is composed of an intelligent module (CPU module) and by up to 6 input or output modules. The module list includes:

- DF8003: CPU module, equipped with a RS485 interface that can be connected to a supervision centre via NK82xx, possibly by means of an RS232/RS485 converter. It controls the I/O modules on a local I^2C Bus.
  DF8003 fully replaces previous CF9003 CPU module, improving the performances of the predecessor in both communication and data processing capacity.
- DF8020: module for 8 non supervised outputs with NO/NC relays included. It fully replaces previous CF9020 output module.
- DF8040: module for 8 non-supervised inputs with galvanic isolation. It fully replaces previous CF9040 input module.
- DF8045: module for 4 supervised inputs with optical isolation.
- DF8046: module for 4 supervised inputs with optical isolation, designed for migration of CS100/DMS7000 Multiplexer systems with B1G030 line supervision boards.

  Note: DF8020 and DF8040 modules can be used for local NK82xx I/O without DF8003 CPU (note that limitations apply depending on NK82xx model and version). That configuration can also include the DF8090 power supervision module. For more information, please refer to the following NK8000 datasheets:

  – NK8222 Datasheet: A6V10062433_a
  – NK8223 Datasheet: A6V10062431_a
  – NK8225 Datasheet: A6V10062445_a
  – NK8232 Datasheet: A6V10238667_a
  – NK8235 Datasheet: A6V10238669_a

All modules have been designed for easy installation in cabinets equipped with DIN rails. A local DC power supply is required, and input voltage can be separated for internal circuitry and external I/O.

Features and Applications

The DF8000 input units detect any input status change, and transmits this information to the supervising host. In the output units, the individual lines are controlled according to the commands sent by the supervising station. The communication link to and from the supervisor is fully monitored.

DF8000 can satisfy the requirements of connecting foreign equipment via contacts in any safety / security application at a competitively price for its product class.

DF8000 can be used to interface technological signals or to interface third party control panels. Typical applications include:

- ACTIVE/INACTIVE or ALARM/TAMPER alarm acquisition
- Technological plants controls: to turn on and off devices or to activate systems
- Security devices interfacing: to monitor alarm signals coming from security devices without serial interface
- Synoptic panels
- Controlling horns, flashing light or any other alarm actuating devices

Bus Connectivity

The DF8000 units communicate with NK8000 Ethernet Port gateways on RS485 using CMX-DL protocol. The RS485 port of NK82xx can be used for direct connection and any of the RS232 COM ports can also be connected as long as an RS232/RS485 converter is installed in-between. The converter can be powered by the same power supply of the DF8003 nearest to it, or by an independent power supply.

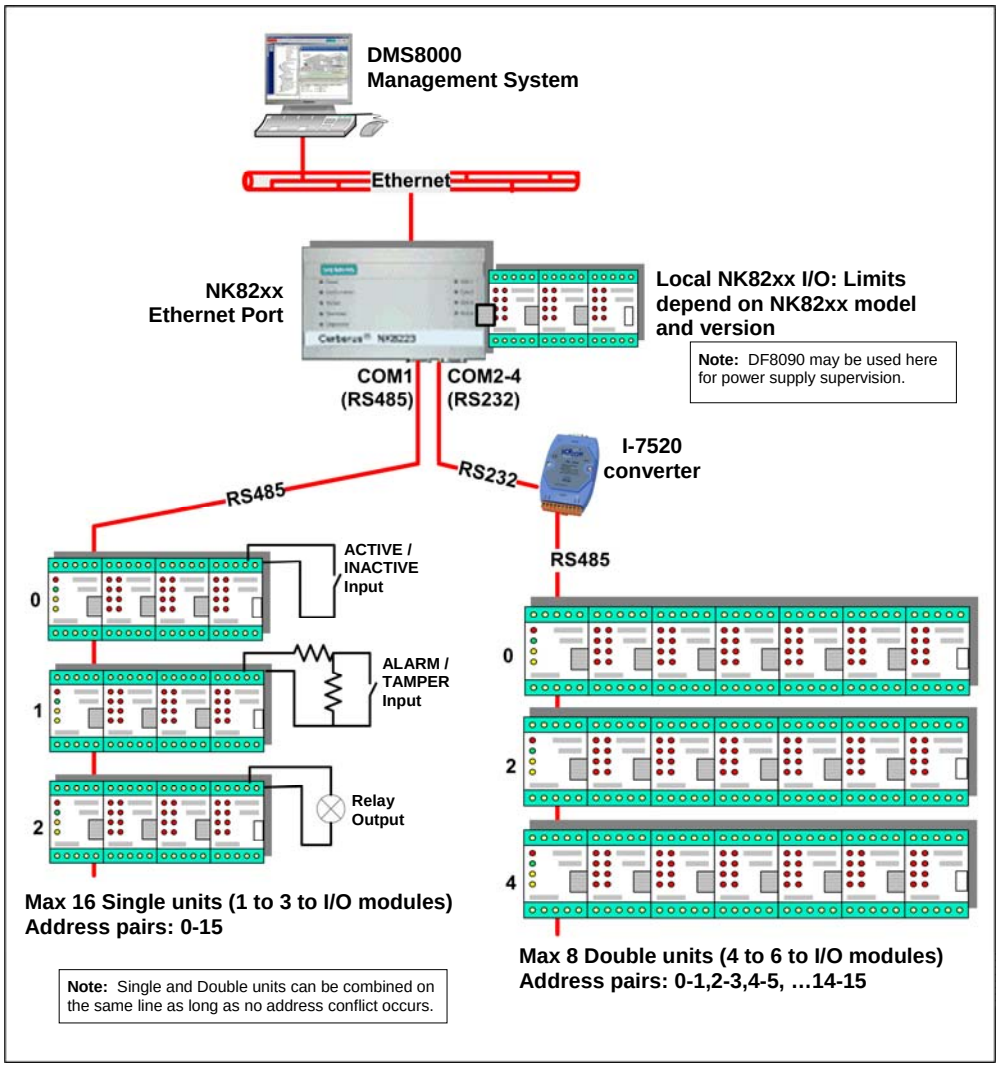
The RS232/RS485 converter is not included in the DF8000 supply. The recommended model is the I-7520 by ACP DAS (http://www.icpdas.com/products/Remote_IO/i-7000/i-7520.htm).

Note: the previous IC-2 converter is no longer available.

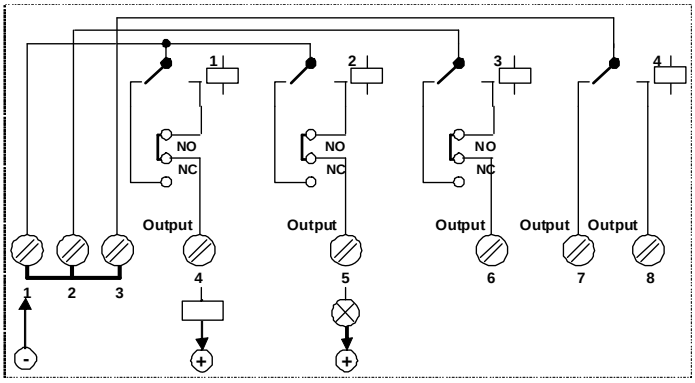
Multiple DF8003s can be connected on the same RSR485 line in a multi-drop configuration.

DIN rail mounting offers the flexibility required to distribute the systems all over a site, or to group them into a single cabinet, providing customers with an optimised solution for their needs.

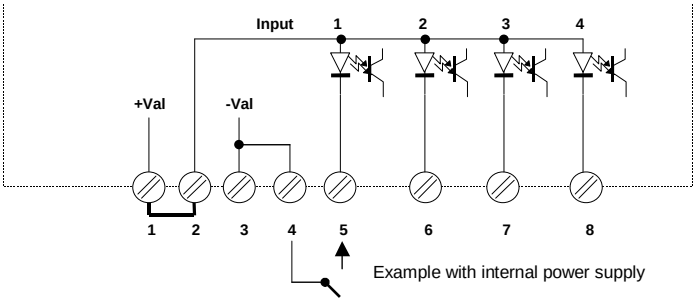
The DF8000 system can be powered using any power supply that complies with the specifications. Note that internal circuits are separated from external input/ output and that separate power supplies should therefore be used.



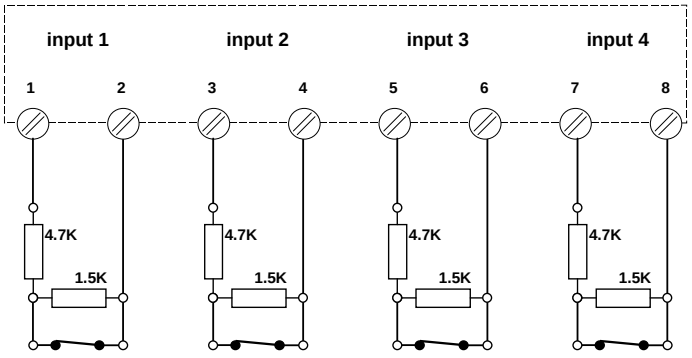
- 8-output module (DF8020): it provides 8 relay outputs, organised in two groups of four, see here below a group of 4:



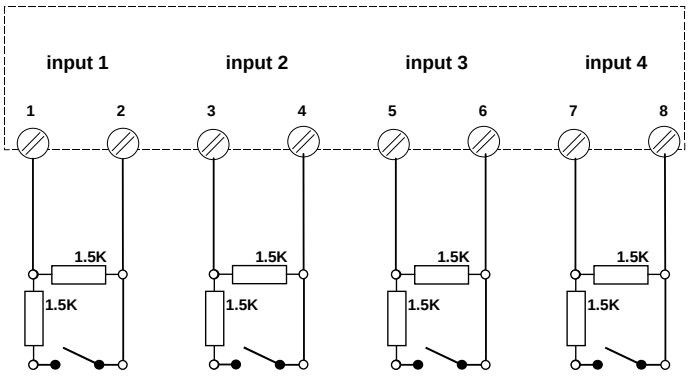
- 8-input module (DF8040): it provides 8 digital inputs with galvanic isolation, see below a group of 4 inputs:



- 4-NC supervised input module (DF8045): it provides 4 normally-closed balanced inputs:



- 4-NO supervised input module (DF8046): it provides 4 normally-open balanced inputs:



DF8000 is organised in units distributed on a RS485 line up to 1200 meters long. The communication protocol allows for a maximum of 16 addresses, and each unit can take one or two addresses depending on the I/O size. In more details, a DF8000 unit is made up of:

- 1 CPU module.
- 1 to 3 I/O modules: single unit, taking 1 of the 16 addresses on the RS485 bus.
  -- or --
  4 to 6 I/O modules: double unit, taking 2 consecutive addresses on the bus.

The following table illustrates the valid configurations for I/O units based on a DF8003 CPU. Note that you cannot mix supervised modules with on/off modules on the same CPU. Instead, different units can coexist on the same RS485 bus until the address limit is reached: 16 single units (1 to 3 I/O modules) or 8 double units (4 to 6 I/O modules).

I/O configuration:	**Modules:**
Input only:	1 x DF8003 plus:
48 in (double)	6 x DF8040
40 in (double)	5 x DF8040
32 in (double)	4 x DF8040
24 in (single)	3 x DF8040
16 in (single)	2 x DF8040
8 in (single)	1 x DF8040
Output only:	1 x DF8003 plus:
48 out (double)	6 x DF8020
40 out (double)	5 x DF8020
32 out (double)	4 x DF8020
24 out (single)	3 x DF8020
16 out (single)	2 x DF8020
8 out (single)	1 x DF8020
Input and output:	1 x DF8003 plus:
40 in / 8 out (double)	5 x DF8040 + 1 x DF8020
32 in / 8 out (double)	4 x DF8040 + 1 x DF8020
24 in / 8 out (double)	3 x DF8040 + 1 x DF8020
16 in / 8 out (single)	2 x DF8040 + 1 x DF8020
8 in / 8 out (single)	1 x DF8040 + 1 x DF8020
32 in/16 out (double)	4 x DF8040 + 2 x DF8020
24 in/16 out (double)	3 x DF8040 + 2 x DF8020
16 in/16 out (double)	2 x DF8040 + 2 x DF8020
8 in / 16 out (double)	1 x DF8040 + 2 x DF8020
24 in/24 out (double)	3 x DF8040 + 3 x DF8020
16 in/24 out (double)	2 x DF8040 + 3 x DF8020
8 in/24 out (double)	1 x DF8040 + 3 x DF8020
16 in/32 out (double)	2 x DF8040 + 4 x DF8020
8 in/32 out (double)	1 x DF8040 + 4 x DF8020
8 in/40 out (double)	1 x DF8040 + 5 x DF8020
Supervised input:	1 x DF8003 plus:
24 in (double)	6 x DF8045 or DF8046
20 in (double)	5 x DF8045 or DF8046
16 in (double)	4 x DF8045 or DF8046
12 in (single)	3 x DF8045 or DF8046
8 in (single)	2 x DF8045 or DF8046
4 in (single)	1 x DF8045 or DF8046

Technical Data

CPU module	DF8003	CPU module
I/O modules	DF8020	8-output (non-supervised) module
	Digital outputs	relay contacts (NO or NC); max 1A at 30 VDC; relay lifetime: 10^5 cycles pulse output: 16 sec
	DF8040	8 input (non-supervised) module
	Digital inputs	normally open or normally closed dry contacts or open collector signals max forward current: 7 mA at 33 VDC over-voltage protection on input lines: 1K V input voltage limit: 33V
	DF8045	4-input NC (supervised) module
	Balanced NC inputs	normally closed dry contacts max forward current: 7 mA at 33 VDC over-voltage protection on input lines: 1K VDC input voltage limit: 33 VDC opto-coupler isolation: 2500 VDC
	DF8046	4-input NO (supervised) module (same characteristic as former B1G030 line supervision boards from CS100/DMS7000 Multiplexer systems)
	Balanced NO inputs	normally open dry contacts max forward current: 7 mA at 33 VDC over-voltage protection on input lines: 1K VDC input voltage limit: 33VDC opto-coupler isolation: 2500 VDC
Power supply	Input voltage (internal circuits)	11... 33 VDC
	Input voltage (external I/O circuits)	11... 33 VDC
	Overvoltage protection on power supply line	2K VDC
	Max. current absorption for 6 modules (int. @13,8V)	220 mA (all I/O active); 75 mA (no I/O active)
	Max. current absorption for 6 modules (int. @ 27V)	140 mA (all I/O active); 60 mA (no I/O active)
	Max. current absorption for 6 modules (ext. @ 13,8V)	400 mA (all I/O active); 25 mA (no I/O active)
	Max. current absorption for 6 modules (ext. @ 27V)	450 mA (all I/O active); 30 mA (no I/O active)
Communications	Connections	2-wire RS485 from DF8003 to NK82xx RS485 interface (or to converter) 3-wire RS232 from converter to NK82xx COMx Up to 16 single / 8 double DF8003 units can be connected using a 2-wire RS485 line in multi-drop configuration.
	Cables and maximum distance	
	– RS232	– AWG 20 (0.5 mm^2) shielded cable, max 15m
	– RS485	– AWG 22 (0.6 mm^2) unshielded cable, max 1200m, (above 800m, install 100 Ohm resistors at both ends)
Operating conditions	Temperature range	0 to 50º C
	Humidity	10 to 90% non condensing
Weight	DF8003 module	150 g
	DF8020/8040/8045/8046/8090 module	110 g
Dimensions	DF8003 CPU module	75 H x 50 W x 48 D mm
	DF8020/8040/8045/8046/8090 module	75 H x 45 W x 48 D mm
Approval	CE	

Details for ordering

		DF8000 I/O Products family	
Code	**Product**	**Description**	**Notes**
S54461-C1-A1	DF8003	CPU module	● No CPU is needed for modules directly connected to NK82xx on the I^2C bus; else, 1 CPU module per RS485 unit is required. → Check valid unit configurations before ordering!
A6E600195	DF8020	8-output module	
A6E600194	DF8040	8-input module	
A6E600196	DF8045	4-input NC module	
A6E600197	DF8046	4-input NO module	
A6E600010	DF8090	Power Supervision Module	

Notes:
- DF8000 can only be installed with NK8000 networks
- Before operating, DF8000 must be configured in a Composer project
- The connected NK82xx must be downloaded with the appropriate project data
- WW8000 Composer and all necessary configuration tools are included in the DMS8000 product CDs

Sales and Technical documentation

Domain	**Document**	**Doc. no**	**Designation**
Sales material	Product Datasheets		
	– NK8222	A6V10062433	Ethernet port for a single subsystem
	– NK8223	A6V10062431	Ethernet port
	– NK8225	A6V10062445	Ethernet port
	– NK8232	A6V10238667	Ethernet port for a single subsystem
	– NK8235	A6V10238669	Ethernet port
	– MM8000	A6V10062415	Management Station
	– MK8000	A6V10062405	OPC Server
	– MT8001	A6V10062403	Management Terminal
	Application & Planning	A6V10063710	DMS8000 Application & Planning Guide
Technical material	Technical Manual	A6V10081388	DF8000 Technical Manual
	Installation, Configuration & Commissioning	A6V10062437	NK8000 Installation, Configuration & Commissioning Guide
	Maintenance & Troubleshooting	A6V10081388	DF8000 Technical Manual → Maintenance and Diagnostics section
		A6V10062437	NK8000 Installation, Configuration & Commissioning Guide – → Maintenance and Diagnostics section
	Connectivity Configuration Guides	A6V10062425	DMS8000 Network, Fire & Intrusion Configuration Guide
		A6V10062451	DMS8000 Access Control Configuration Guide
		A6V10062457	DMS8000 Video Configuration Guide
		A6V100 65253	DMS8000 OPC Configuration Guide

Disposal

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

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

Document no. **A6V10081184_a_en**
Edition 06.2010