SNP
Integration Controller

The SNP Integration Controller (IC) provides seamless integration of the Satchwell Sigma Building Management System with one or more controllers using the Satchwell Networking Protocol (SNP). SNP is a simple generic communication protocol used by some Schneider Electric products (IAC or Unifact controllers) and some third party controller manufacturers.

This IC allows these Schneider Electric SNP products to be interfaced to the Sigma Building Management System.

The IC concept allows the linking of a range of dedicated plant control systems to all the facilities available from Sigma. Centralised plant control is achieved by allowing an operator (located at a Sigma Server anywhere on the integrated system) to view and change parameters of Schneider Electric's own equipment or third party equipment.

The IC can act as a communications interface, providing a common boundary between differing system protocols so that a fully-functional two-way data link is maintained.

Relevant data message parameters from the target system are mapped to standard Sigma analogue and digital input/output objects. By manipulating these objects, the operator can directly monitor equipment status and effect control of selected equipment functions.

FEATURES

- Provides a consistent user interface with information displayed in the same format as other Sigma objects.

- Maps SNP data to standard Sigma objects.

- Centralised plant control from a Sigma Server.

- Cross references SNP system and other controller data, allowing global control strategies.

- Provides, through Sigma, comprehensive graphics. Individual graphics are independent of equipment types.

- Reports alarms intelligently, based on total system activity. Parameters from the SNP system are mapped onto standard Sigma object types, allowing alarm limits to be applied.

- Supports Sigma analogue objects, i.e. AI and AO.

- For systems which need additional resilience, the Dual Trunking options provide redundancy and allows for cabling and other communications channel failures. Dual Trunking is available in various combinations of cabling/protocol technologies.

- Logs SNP objects using the standard logging of Sigma.

- Contingency Logs held in RAM (automatic circular logging of all objects, to provide typically last 24Hrs history (at 15 minute intervals or 100 values per object)). Viewable via Sigma Client, WinCE and/or Web.

- Direct connection of PSTN modem.

- Allows Schneider Electric products (IAC and Unifact) to operate with the latest generation Sigma Building Management System.

- Allows third party equipment which uses the Satchwell Networking Protocol to operate with the latest generation Sigma Building Management System.

- Detects and reports SNP system errors. Converts parameters from the SNP system to standard Sigma object types.

- Interfaces to SNP products at a high level whilst still retaining the integrity of the SNP system. Failure of one system will not adversely affect the operation of the other.

- SNP system objects interact with other Sigma objects and are used as part of the overall building control strategy including other third party interfaces (dependent on supported functionality).

PART NUMBERS

S-IC3-SNP-A . . . . .SNP Integration Controller with 1 ARCNET port
S-IC3-SNP-E . . . . .SNP Integration Controller with 1 Ethernet port
S-IC3-SNP-DT . . . . SNP Integration Controller with 1 ARCNET port, 2 Ethernet ports and one Σ LAN (secondary) port)
Note: On a controller LAN, either ARCNET or Ethernet can be configured (not both).

ACCESSORIES

S-DNN-BAT . . . . Backup Battery, DNN, NiMH (optional)
579-1-479 . . . . Trunking mounting kit (sufficient for two knock-outs) - Allows easy installation to trunking system.

Schneider Electric

[Satchwell Sigma] SNP

TECHNICAL DATA

Power Supply
Supply voltage	230Vac ±10%. Switch selectable to 115Vac ±10%
Supply frequency	50/60Hz ±10%
Power consumption	15VA typical, 24VA maximum
Mains fuse	400mA anti-surge, 250V.
Battery fuse	2A quick blow, 250V.
Heat dissipation	10W maximum

Ambient Temperature
Operating temperature	0°C to +50°C
Storage temperature	–20°C to +65°C
Operating humidity	10% to 90% RH, non-condensing
Storage humidity	5% to 95% RH, non-condensing

Agency Compliances
Emission	EN 61326:1997, FCC Part 15
Safety	EN 60730

Construction
Enclosure	Mild steel case and cover with plastic side panels
Flammability class	UL 94 V-0
Protection class	IP 40 by use of the trunking kit.
Dimensions and weight	see Fig. 4
Mounting	Wall or panel mounting.
Wiring terminals	Hard wired to pluggable screw terminal blocks. Accept up to 1.5mm² conductor.
Cable entry:	Chassis knockouts in top, back, sides and bottom. Trunking kit is intended for use with the rectangular knockouts in the top, bottom and back of the chassis.

Electronics
Microprocessor	Cirrus Logic 32-bit ARM-720T processor running at 74MHz
RAM:	2Mbytes. Battery backed (see power failure reserve).
Real-time clock	Maximum error ±100 seconds/month. Battery backed (see power failure reserve)
Flash EPROM:	8Mbytes. Supports dual image hot-swap of operating system, and permanent store of all configuration and object data and accumulated values.
LED Indication	Two externally visible LEDs, 'Heartbeat' and 'Scan Rate', indicate operational status of the device; internally, two LEDS per port indicate communications and activity.

Communications
ARCNET controller LAN	RS 485. Data rate 156kbps to 5Mbps. Opto-isolated LAN, max. length of Belden 9502 = 600m @ 156kbps, 20m @ 5Mbps. Max. devices = 31 (16 if dual trunk used)
Ethernet controller LAN	Compatible with 10base-T or 100base-TX networks. Data rate 10Mbps or 100Mbps using Cat.5 or better UTP or STP cable. Max. cable length 100m. Max. no. of devices = 31 (16 if dual trunk used).
Σ LAN (dual trunk option only)	RS 485, token passing bus (IEEE 802.4), 8 bit asynchronous at 19.2kbps. Opto-isolated (compatible with all non-isolated products). Transorb protected. Daisy chain topology. Max. LAN length (Belden 9502) - 1000m @ 19.2kbps.
SNP LAN	RS 485, SNP Satchwell proprietary, binary handshake, 1.2kbps, non-isolated. Max. LAN length (Belden 8762) - 1000m. Transorb protected. Max. no. of devices = 31
Modem port	RS 232. Data rate programmable to 19.2kbps. Non-isolated.
Service port	RS 232. For connecting Laptop/PC with device configuration software. Available on a 'D' Type or a pluggable connector (not both).
HMI (WinCE) port	Human Machine Interface for connecting a hand-held computer or similar device.

SNP Controllers Supported	IAC400, IAC420, IAC600, Touch Screen, MMC2401, MMC2402*, MMC2403, MMC2404, MMC2601, MMC3601, MMC4601, MMC4701, MMC2451, MMC2452, MMC2453, CSMC3805, URC1201, URC2201 *MMC2402 controllers date coded before June 1991 (9106) require modification.

Objects Supported
Maximum number of objects	1000 hardware/software objects and 4 fixed function objects (Backup to Flash EPROM, Controller Time, Hours in Service and Scan Rate).
Mapped objects	Analogue Input, Analogue Output (software features only). Mapping of digital values in SNP devices is achieved using the IC's analogue objects.
Software objects	Time Schedule, Holiday, Calculation, Degree Day, Setpoint Adjust, Control, Rotation, Optimiser, Programmable

Power Failure Reserve
Nickel metal hydride rechargeable battery (continuously trickle charged) giving a typical 90 day power failure back up of data stored in RAM and for the real time clock (assuming the battery is in good condition).
An optional 2000mAH NiMH battery pack (S-DNN-BAT) is available for Uninterrupted Power Supply operation. Typically 2.5 hours back-up with module operation. Battery times quoted are for a fully charged battery. Alternatively an external UPS supplying 12Vdc ±20%.
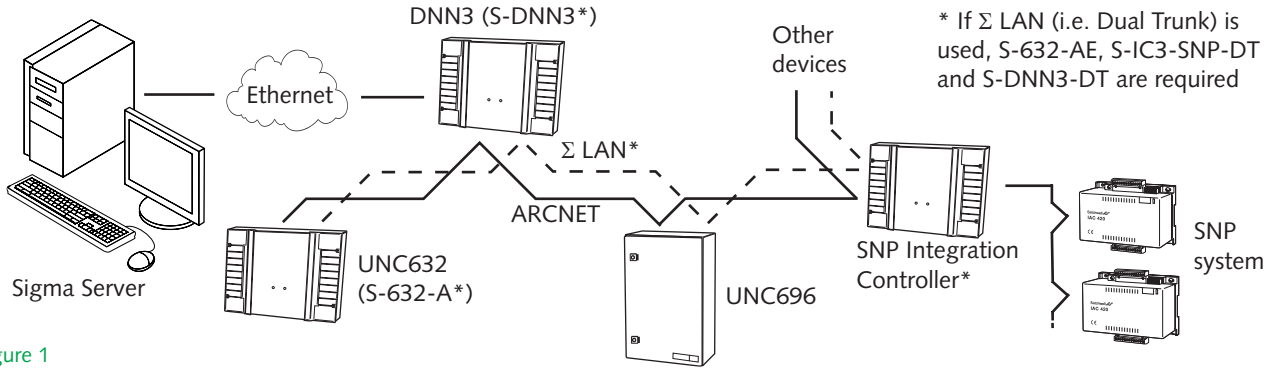
TYPICAL SYSTEM DIAGRAMS

LOCAL ARCNET NETWORK

DNN3 (S-DNN3*)

Other devices

* If Σ LAN (i.e. Dual Trunk) is used, S-632-AE, S-IC3-SNP-DT and S-DNN3-DT are required

Ethernet

Σ LAN*

ARCNET

SNP Integration Controller*

SNP system

Sigma Server

UNC632 (S-632-A*)

UNC696

Figure 1

LOCAL ETHERNET NETWORK

DNN3 (S-DNN3*)

Other devices

Ethernet

Ethernet

SNP Integration Controller*

SNP system

Σ LAN*

UNC632 (S-632-E*)

Sigma Server

* If Σ LAN (i.e. Dual Trunk) is used, S-632-AE, S-IC3-SNP-DT and S-DNN3-DT are required

UNC696

Other devices

Figure 2

MODEM NETWORK

Modem

Public Switched Telephone Network

Ethernet

RS 232

(PSTN)

DNN3

Modem

RS 232

SNP Integration Controller

DNN3 (S-DNN3*)

Modem

Other devices

SNP system

Sigma Server

RS 232

Σ LAN*

SNP system

ARCNET

* If Σ LAN (i.e. Dual Trunk) is used, S-632-AE, S-IC3-SNP-DT and S-DNN3-DT are required

UNC632 (S-632-A*)

UNC696

SNP Integration Controller*
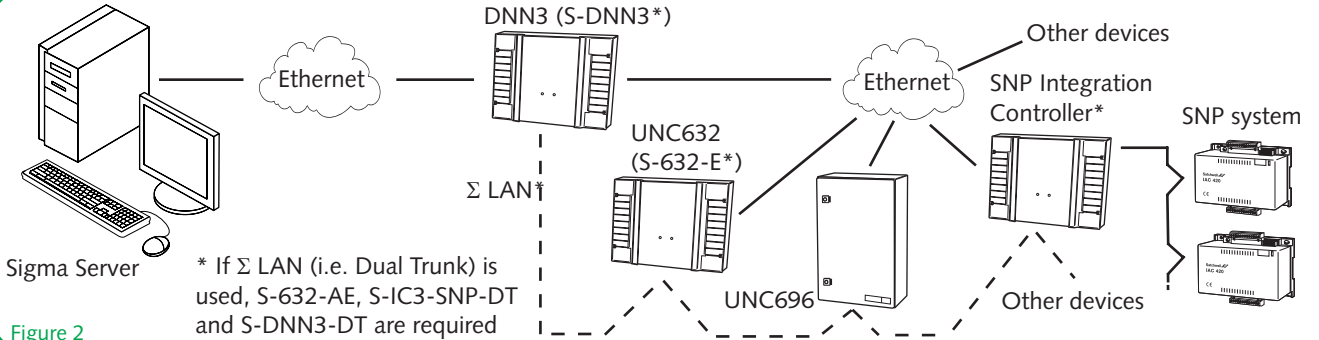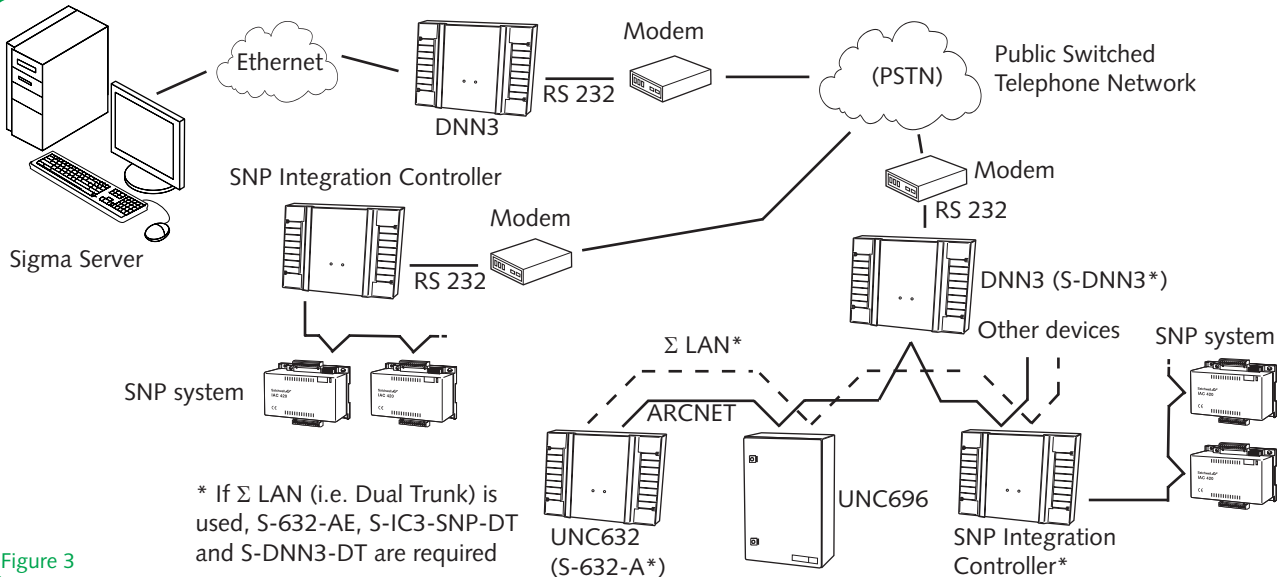
Figure 3

COMMUNICATIONS

ARCNET

ARCNET is a token-passing communications protocol that delivers predictive (deterministic) performance. ARCNET twisted pair connectivity does not require hubs, switches or routers. This RS 485 connectivity allows for a range of speed/distance trade-offs with speeds of up to 5Mbps.

On a Sigma Controller LAN, ARCNET communications allow easy connection to up to 31 devices (plus the DNN3), while on a Sigma Backbone LAN, up to 128 devices can be accommodated via Ethernet with ARCNET as the secondary (fallback) LAN.

ETHERNET

The Ethernet communications protocol provides high-speed 10base-T/100base-TX connectivity to Sigma routers (DNN3s) and controllers (UNCs and IC3s); this equipment can be interconnected either on a Sigma Controller LAN (up to 31 controllers plus the DNN3) or on a Sigma Backbone network.

When used as part of the Sigma Backbone network, the Ethernet network can be either local or wide area.

With the appropriate use of bridges (hubs) and routers (switches), there is no practical limit to the number of devices that can be connected and the

Ethernet communications can operate on networks which operate with different media and at different data rates.

INSTALLATION

This unit should be commissioned as part of a Satchwell Sigma system by a Schneider Electric engineer or an approved Schneider Electric agent.

DOCUMENTATION

- UNC632 - DS 13.312
- UNC696 - DS 13.324
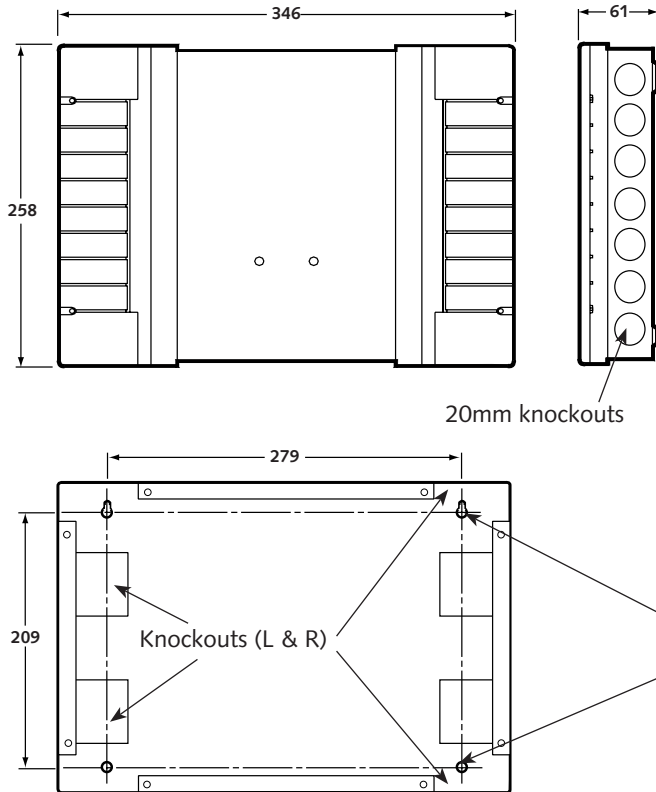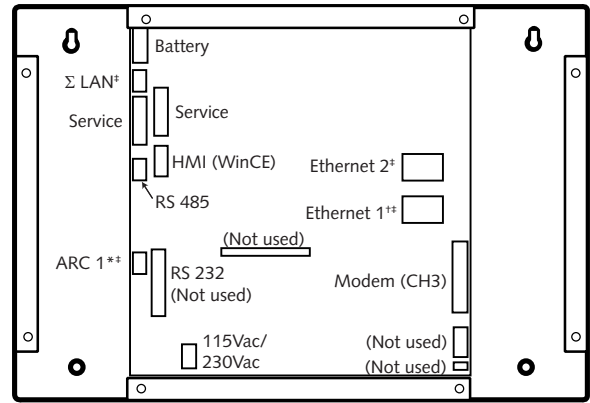- UNC796 - DS 13.325
- DNN3 - DS 13.424

DIMENSIONS

346

61

258

20mm knockouts

Figure 4

279

209

Knockouts (L & R)

Mounting Holes

CONNECTOR LOCATIONS

Battery

Σ LAN‡

Service

Service

HMI (WinCE)

Ethernet 2‡

RS 485

Ethernet 1†‡

(Not used)

ARC 1*‡

RS 232
(Not used)

Modem (CH3)

115Vac/
230Vac

(Not used)

(Not used)

* = -A version, † = -E version, ‡ = -DT version

Figure 5

Weight = approx. 2.9kg

WARNINGS

THE IC3-SNP IS A MAINS OPERATED DEVICE. LOCAL WIRING REGULATIONS AND USUAL SAFETY PRECAUTIONS MUST BE OBSERVED. NOTE EARTHING REQUIREMENTS.

THIS PRODUCT CONTAINS A NICKEL METAL HYDRIDE BATTERY WHICH IS COMPLETELY SAFE WHILST IN NORMAL OPERATION. THE BATTERY MUST BE DISPOSED OF IN ACCORDANCE WITH LOCAL WASTE REGULATIONS. THE SAME APPLIES TO ANY BATTERIES SUPPLIED AS OPTIONAL EXTRAS.

Cautions
- This unit should be commissioned as part of a Satchwell Sigma system by a Schneider Electric engineer or an approved Schneider Electric agent.
- Observe maximum ambient temperature.
- Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.
- If any equipment covers have to be removed during the installation of this equipment, ensure that they are refitted after installation to comply with CE safety requirements.
- Interference with those parts under sealed covers renders the guarantee void.
- Ensure that the IC3-SNP has a verified good earth.
- It is recommended that the internal wiring in the controller is loomed and identified to aid servicing and extensions to the system.
- A full wiring specification is available from Schneider Electric or your local Schneider Electric agent on request.
- The design and performance of Schneider Electric equipment is subject to improvement and therefore liable to alteration without notice.
- Information is given for guidance only and Schneider Electric does not accept responsibility for the selection or installation of its products unless information is given by the company in writing relating to a specific application.
- It is possible that this publication may contain reference to, or information about, Schneider Electric products (hardware and software), programming or services that are not announced in your country. Such references or information must not be construed to mean that Schneider Electric intend to announce such products, programming or services in your country.
- A periodic check of the Building Management System is recommended. Please contact your local sales office for details.
- All installation wiring must conform to BS 6701:2004 & EN 50174.

Schneider Electric