

UNC796

Universal Network Controller

The Satchwell Σ (Sigma) Universal Network Controller (UNC796) is fully intelligent and incorporates its own 32-bit microprocessor providing Direct Digital Control of plant. The UNC796 is a Rack/Panel mount unit (19 inch).

The UNC796 scans and monitors dedicated functions and will automatically decide on any control action necessary after initial programming from a Sigma server. It can operate independently of other system components and communicates with any selected Sigma Client only when necessary to provide data such as alarms or logging information or on demand by the operator.

Each controller can monitor and control up to 96 individual items of plant and/or sensors. Plant monitoring and control requirements are met by the appropriate selection of input and output cards. Further flexibility is achieved by enabling analogue objects to be used in a digital mode (on/off).

The UNC796 CPU card (S-x96CPU-AE) contains two communications media (ARCNET and Ethernet), either of which can be used with the on-board Sigma Controller LAN (also known as the Σ LAN) to provide optional dual-LAN operation.

GENERAL FEATURES

- Intelligent Microprocessor based controller
- 32-bit microprocessor technology
- Up to 96 configurable I/O objects and up to 252 objects inc. software objects
- Cable management system
- Built-in ARCNET® and Ethernet communications
- ARCNET and Σ LAN fully opto-isolated
- 10Mbps or 100Mbps Ethernet connectivity via RJ45 connector. Protocol conforms to IEEE 802.3 standard
- Integral IP addressing
- 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).
- ARCNET connectivity with a range of speed/distance with speeds from 156 kbps to 5 Mbps. Conforms to ANSI 878.1 ARCNET protocol standard.
- Dual image Hot-Swap Flash EPROM for fast and easy firmware upgrades
- Flexible and configurable application software
- 1.4 hour or optional 12 hour (typical) full function battery support (Ni-Cd battery)
- 90 day retention of all configuration data and Real Time Clock (Ni-MH battery)
- Door tamper monitoring
- Mains/battery monitoring
- Pluggable I/O cards, each with 16 I/Os. Up to 6 I/O cards/controller, mix & match. Max. 6 of any card type.

APPLICATION AND ENERGY MANAGEMENT FEATURES

- Distributed Direct Digital Control
- Multi Password Access (from the central server)
- Energy Management Programmes
- Time Schedules
- Holiday Schedules
- Optimum start/stop of plant
- Automatic Power up of plant
- System and Plant Alarms
- Real Time System Logs
- Calculation objects
- Rotation objects
- Programmable objects for user-defined control strategies
- Degree Day Calculations
- Maximum Demand Control/Load Shedding
- Standby Generator objects

PART NUMBERS

S-796 UNC796 Universal Network Controller
 S-x96CPU-AE UNC796 CPU Card (with ARCNET/Ethernet and Σ LAN communications), Opto-isolated (required)

ACCESSORIES

S-UNC-AI Analogue Input Card (Optional) S-UNC-CBL Ribbon Cable (Optional)
 S-UNC-DI Digital Input Card (Optional) S-UNC-BKT Bracket (Optional)
 S-UNC-AO Analogue Output Card (Optional) S-UNC-BAT Battery Pack (typical 12 hour
 S-UNC-DO Digital Output Card (Optional) power failure back-up) (Optional)
 S-UNC-CMD 8-Channel DO Model (Optional)

Note: The UNC696 is compatible with Sigma only. It is NOT compatible with BAS 2800+ or any other BAS system.



TECHNICAL DATA

Power Supply

Supply voltage 230Vac ±10%.
 Supply frequency 50/60Hz ±10%
 Power consumption 25VA maximum
 Fuse An external 3A fuse should be fitted to the mains power lead.
 Heat dissipation 25W maximum, 20W typical.

Ambient Limits

Operating temperature. 0°C to +50°C
 Storage temperature. -20°C to +65°C
 Operating & Storage humidity up to 95% RH, non-condensing

Agency Compliances

Emission EN 61326:1998, FCC Part 15
 Safety EN 60730, EN 60950 and UL 916

Construction

Enclosure Steel 19" rack mounting style case, fully compatible with DIN 41494, Part 5 IEC 297, Section 2 and IEC Sub Committee SC48D.
 Protection class. IP 20
 Dimensions and weight see Fig. 4
 Mounting. Panel or Rack mounting
 Wiring terminals. Hard wired to pluggable screw terminal blocks. Accept 0.5mm² to 1.3mm² conductor or IDC plug and socket connection to external input/output modules, see DS 13.356.
 Cable entry. Eight, 19 mm diameter holes through the case bottom.

Electronics

Microprocessor. Cirrus Logic 32-bit ARM-72T processor running at 74MHz.
 RAM. 1Mbyte. Battery backed (see power failure reserve).
 Real-time clock. Maximum error ±100 seconds/month. Battery backed (see power failure reserve).
 Flash EPROM 4Mbytes. Supports dual image hot-swap of operating system, and permanent store of all configuration and object data and accumulated values.

Communications (See Σ *Cabling Guide* for options)

ARCNET controller LAN RS 485 @ 156kbps to 5Mbps. Opto-isolated LAN (compatible with all non-isolated products), max. length of Belden 9502 = 600m @ 156kbps, 20m @ 5Mbps. 31 devices max. (16 if dual trunking 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. 31 devices max. (16 if dual trunking used).
 Σ LAN. 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. 16 devices max.
 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.
 HMI (WinCE) port Human Machine Interface for connecting a hand-held computer or Sigma Compact Edition (PDA).
 Service port RS 232. For connecting Laptop/PC with device configuration software. Available on a 'D' Type or a pluggable connector.

Number of Objects. Up to 96 physical objects and 246 objects including software objects (depending on object configuration), and 6 fixed function objects (Mains Status, Door Status, Controller Time, Hours in Service, Backup to Flash EPROM and Scan Rate).

Power Failure Reserve

Full Operation: Nickel-Cadmium rechargeable (continuously trickle charged) battery giving a typical 1.4 hour power failure back-up. An optional battery (S-UNC-BAT) provides a typical 12 hour power failure back-up. Full monitoring control and communication are maintained during battery operation.

Memory/Clock: Typical 90 day memory and Real Time Clock retention at the end of normal battery reserve using Ni-MH battery (continuously trickle charged). Battery backup times are typical and assume a fully charged battery that is in good condition. To maintain efficient battery operation, controller should not normally be operated for long periods outside the 10 to 40°C range.

INPUTS AND OUTPUTS (OPTIONAL)

I/O Point Type	Description
Analogue Inputs	0-10K Ω , 0-10V, 0-20mA - Jumper selected. See DS 13.343 (S-UNC-AI).
Digital/Pulse Inputs	Volt-free Make/Break contacts; metering inputs. See DS 13.343 (S-UNC-DI).
Analogue Outputs	0-10Vdc, plus up to two 0 - 20mA. See DS 13.353 (S-UNC-AO).
Digital Outputs	SPST Voltage Free Relay contacts located internally or on a separate module. See DS 13.353 (S-UNC-DO).
Relay Outputs	Eight SPCO Voltage Free Relay contacts per module. See DS 13.353 (S-UNC-CMD).

TYPICAL SYSTEM DIAGRAMS

LOCAL ARCNET NETWORK

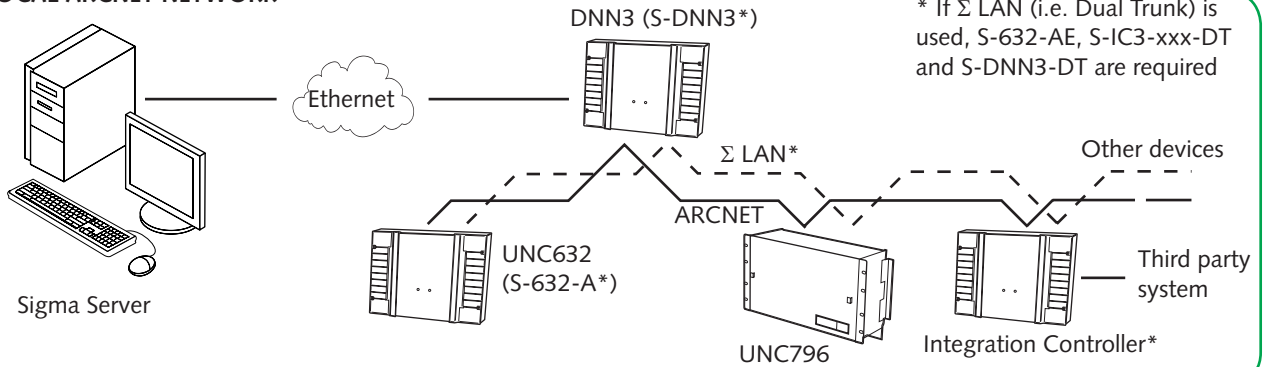


Figure 1

LOCAL ETHERNET NETWORK

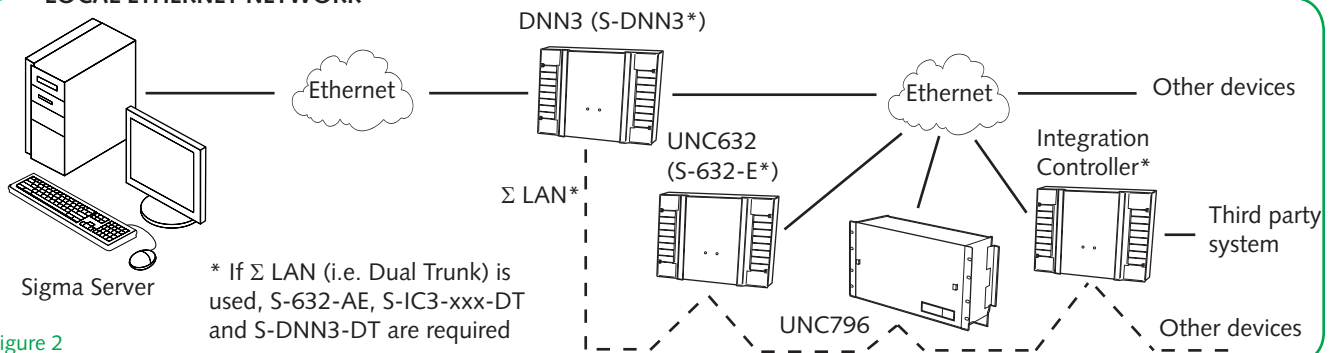


Figure 2

MODEM NETWORK

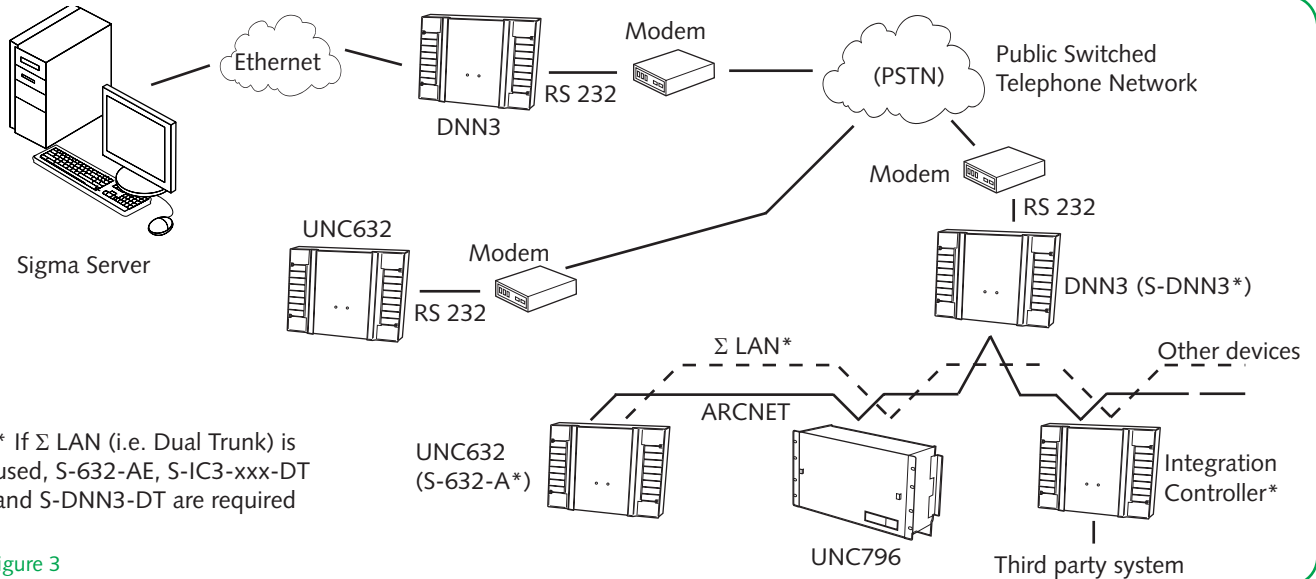


Figure 3

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.

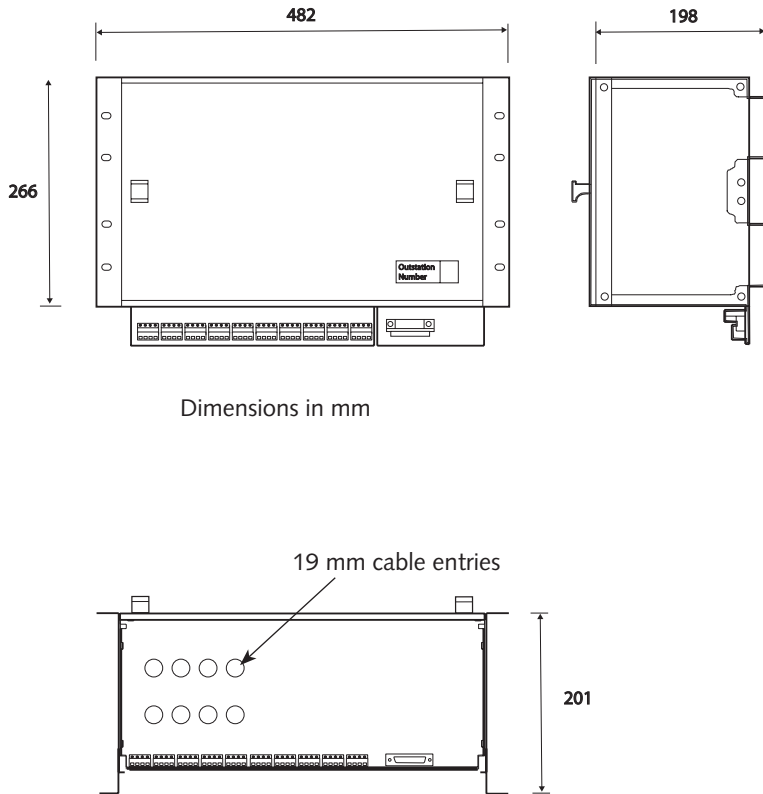
INSTALLATION

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

DOCUMENTATION

- DS 13.101 - Software Overview
- Analogue/Digital Inputs - DS 13.343
- Analogue/Digital Outputs - DS 13.353
- Relay Outputs - DS 13.356
- DNN3 - DS 13.424
- UNC632 - DS 13.312

DIMENSIONS



Dimensions in mm

Weight: approx. 9 kg

CONNECTOR LOCATIONS (CPU CARD)

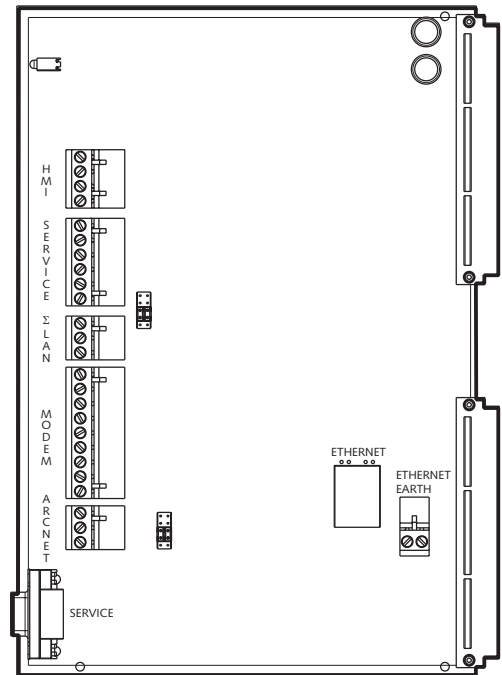


Figure 5

Figure 4

WARNINGS

THE UNC CONTROLLER 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.

Cautions

- This unit should be installed and 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 UL and CE safety requirements.
- Interference with those parts under sealed covers renders the guarantee void.
- All wiring to the controller input/output terminals must be twisted pair screened wiring (not required for Triac outputs) with the screen earthed at the controller earth terminals only. The controller must have 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.

On October 1st, 2009, TAC became the Buildings business of its parent company Schneider Electric. This document reflects the visual identity of Schneider Electric, however there remains references to TAC as a corporate brand in the body copy. As each document is updated, the body copy will be changed to reflect appropriate corporate brand changes.