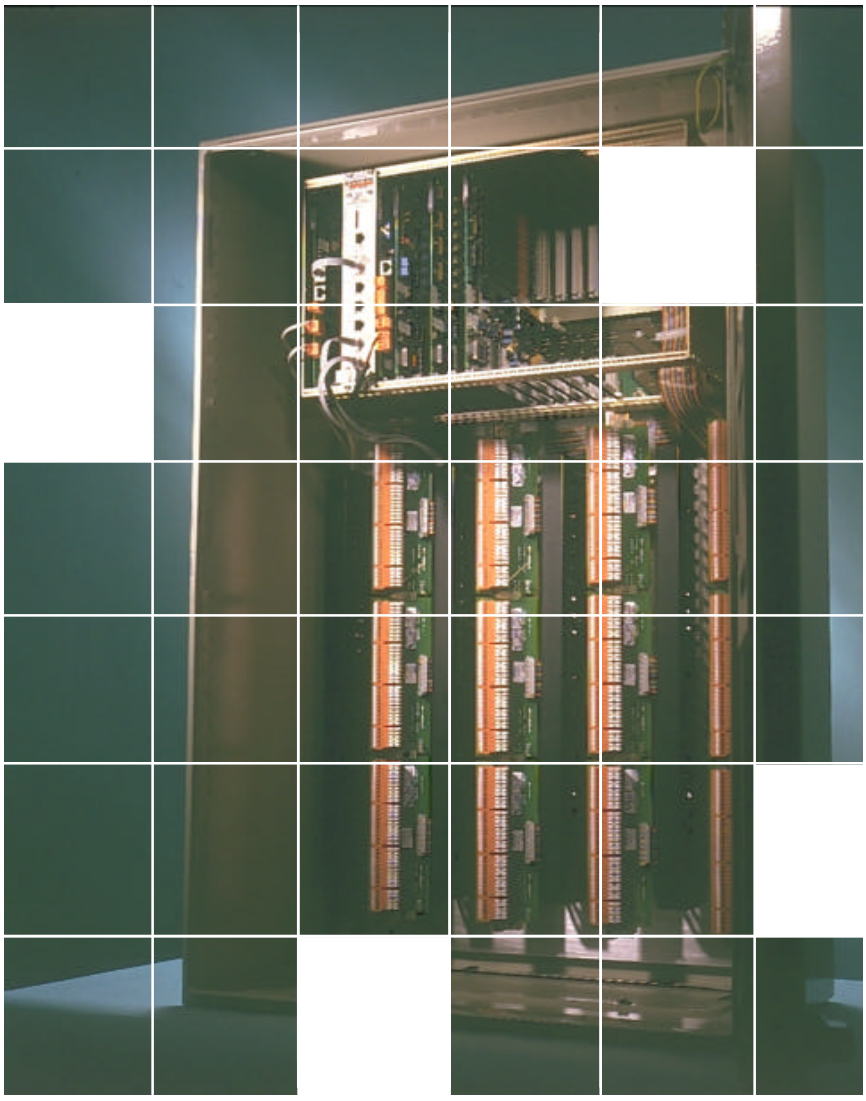
Substation control and automation

Talus 2000-C10

Product overview



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1 Introduction

The Talus 2000-C10 is a cost effective, low risk solution which includes typical RTU functionality and uses extensive proven circuitry and proven software routines.

Talus 2000-C10 is targeted for distribution substations applications requiring programmable functionalities with connectivity to multiple intelligent electronic devices (IEDs), but with the capability for discrete I/O. It is therefore particularly suited to both the greenfield and retrofit Primary Distribution Substation markets.

The main features are :

Integrated or coordinated solution

- integrates with other Schneider products to provide the total substation solution
- multi-protocol capability to host(s)
- capability to communicate and manage other manufacturers Intelligent Electronic Devices (IEDs)
- retrofit capability plus upgrade of functionality

Programmable automation functions

- supports a full range of mathematical and logical operations
- time based and event based derivation blocks
- application examples include:
  - data manipulation
  - automatic distribution network reconfiguration
  - interlocking of events/controls

Modular, extendible architecture

- eight serial ports for external communications (as standard)
- dual internal modem support with each modem catering for main and standby lines
- configurable via Personal Computer
- large discrete I/O capacity
  - 32 or 64 digital inputs
  - 8 or 16 secure control outputs
  - 8 or 16 analogue inputs

Integration with network control systems

- assured compatibility with the Milenium 8000 range
- multiple host capability
- provides the network gateway to substation equipment
- data concentrator functionality

Investment for the future

- designed for adaptation to the emerging international standards
- designed for discrete retrofit and digital architectures

2 Programming capability

Programs are written on a personal computer in a high level language. The routines and statements are compiled by Schneider WHIRL software utility prior to downloading to the controller.

Functionality available includes:

- Support for a full range of mathematical and logical operations
- Time based and event based derivation blocks
- WHIRL compiler with built-in simulator for monitoring and debugging programs prior to downloading

3 Enclosure

The standard enclosure for the Talus 2000-C10 is:

- wall box
- nominal dimensions 1200mm (h) x 600mm (w) x 300mm (d)
- colour RAL 7032 (mid-grey)

4 Housing and backplane

The central item of the Talus 2000-C10 is the 19” rack which incorporates the backplane . The backplane removes the need for any connectors on the front face of any I/O module, allowing complete freedom of module access.

The backplane is designed to accommodate:

- two modems
- one Talus 2000-C10 controller
- one service card
- up to nine I/O cards
- connection to extension rack

5 Talus 2000-C10 controller

Each TALUS 2000-C10 is fitted with one controller card which manages all activities. The controller module includes a 32 bit microcontroller and provides the following:

- **Protocol/emulation**

Standard Schneider WISP+ protocols are used giving high security of data transmission while maintaining compatibility with existing Schneider devices.

The architecture of the Talus 2000-C10 enables international protocols and other proprietary protocols to be emulated when required.

Protocols/emulations available and proven include those required to communicate with SEPAM and other digital relays. Concurrent emulation of different protocols on adjacent I/O channels is also supported.

- **Multiple host support:**

The Talus 2000-C10 can support up to 2 host systems with independent databases.

- **8 Serial Ports:**

  - two for Host Comms
  - two for Master Comms/ IED (for communication with slave RTU)
  - two for IEDs
  - one for I/O Module
  - one for a local terminal

6 Service card

Each Talus 2000-C10 includes one service card, which is responsible for the power distribution to the different cards and to the extension rack.

The main features of the service card are:

- connection, switching and distribution of ‘plant power’ to the backplane
- connection and switching of incoming ‘control power’
- provision of a ‘dummy control’ circuit

7 Input/Output cards

The Talus 2000-C10 housing can include up to nine of the following Input/Output cards according to the customer requirements:

■ **Digital Input Card**

- option of 64 or 32 channels
- option of 24V or 48V battery systems
- ‘health’ LED visible at the front of the card

■ **Control Output Card**

- option of 8 or 16 (two-pole) channels
- option of 24V or 48V battery systems
- 60V, 1A, 60W (non-inductive load)
- ‘health’ LED is visible at the front of the card

■ **Analogue Input Card**

- option of 16 or 8 channels
- 12 bits plus sign conversion
- 4 - 20mA, ±10mA, ±20mA and ±1V, ±2V, ±5V and ±10V ranges as standard
- ‘health’ LED is visible at the front of the card

8 Communications

8.1 Inter-Module

Communications between the main controller and the I/O modules is via an RS485 two wire link, utilising the WISP+ protocol at 9600 baud.

8.2 External

The main controller communicates with:

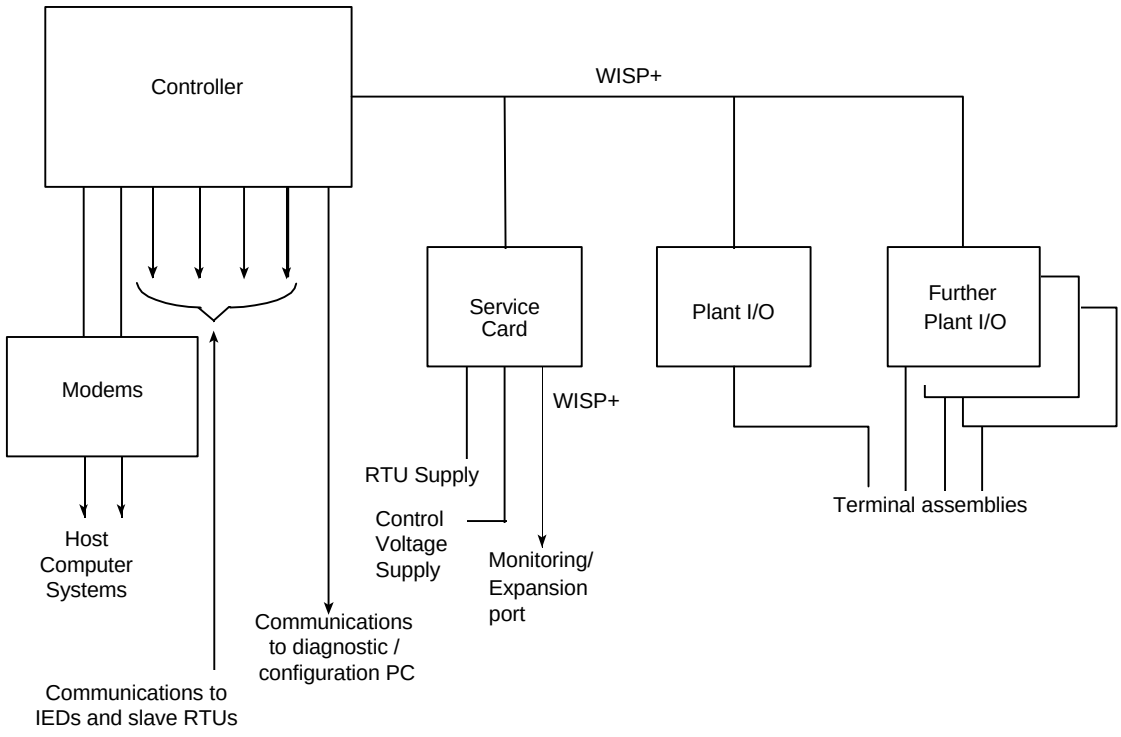
- Host devices utilising WISP+ as standard
- Devices conforming to the standardised IEC 870-5-101 protocol*
- Satellite RTUs utilising WISP+
- IEDs using MODBUS** (such as SEPAM)
- Courier (GEC K Series) relays**
- Other devices/protocols available on request**

* These protocols are scheduled to be available in December 1997.
** Please contact Schneider Limited, PMS Division for more information.

8.3 Modem

Up to two modems can be included in the Talus 2000-C10, with the following features:

- V23 & BELL 202
- 1200, 600, 150, & 75 Baud
- BABT approved for use on analogue speechband/private cicuits
- Support for main & standby lines
- Support for dual communications ports
- Support for radio switch



Talus 2000-C10 Architecture

9 Environmental specifications

Talus 2000-C10	
Serial channel isolation	1.5KVrms
Plant cabling	2.5mm^2 max (screw terminals) 0.4mm^2 min/0.65mm^2 max (Krone terminals)
Operating temperature range	-0C to +50C
Storage temperature range	-40 to +50C
Relative humidity	10% to 90% non-condensing (standard) 10% to 95% non-condensing (tropicalised)
Safety	BS EN 41003 and BS EN 60950
EMC emissions	BS EN 55022 Class A
EMC immunity	BS EN 50082-2 (industrial generic standard) IEC 255-22-3 Class III IEC 255-4 Class III (5KV impulse)
Wallbox	IP54

10 Configuration, test and maintenance

A full range of tools is provided to configure and testing the Talus 2000-C10. This include:

- A configurator, which generates a file from a personal computer for downloading information to the controller
- A modem configurator
- A local Video Terminal (VT) facility that allows the database to be examined or diagnostics to be run
- A Talus master terminal unit utility (TMTU), used to test devices employing the WISP+ message set
- A TLINE utility which runs on a personal computer enabling WISP+ messages, to and from the devices, to be interpreted and displayed

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