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TECHNICAL SPECIFICATION ADDENDUM

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This Technical Specification shall be read in conjunction with the following amendments:

Check appropriate boxes below

Addition		Replacement	X	Deletion	
AMENDMENTS					
8.1 Operational equipment shall preferably derive its auxiliary power from the substation 110 V D.C. supplies as specified in NGTS 3.12.4. Alternatively 48 V D.C. supplies may be used as specified in NGTS 3.12.4 if found more suitable for a particular installation.					
Date Effective From		25/03/10			

	Originated by	Authorised by	Approved by
Name	Leigh Fraser		
Job Title	Asset Policy Engineer		
Department	Forward Policy		
Date	25/03/10		



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NGTS 3.24.4
Issue 1
August 2000

HARDWARE PLATFORM

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Authorised for Issue by:

John Scott
Director of Engineering
Engineering & Technology

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Registered Office
National Grid House
Kirby Corner Road
Coventry
CV4 8JY

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Administrative enquiries regarding this document should be directed to:

ET Business Resources at Leatherhead, Telephone: 01372 383930

Contact name: Mark Skinner (author)
Network Control & Telecommunications
Telephone: 01372 383669

HARDWARE PLATFORM

FOREWORD

This specification is part of the Substation Information, Control and Protection suite of technical specifications and deals with the requirements for hardware platforms for use both at bay and substation levels.

1 SCOPE

This specification states the functional and performance requirements for hardware platforms provided for the purpose of delivering functionality as specified in the Substation Information, Control and Protection (SICAP) suite of technical specifications and is applicable both at bay and substation levels.

This specification is applicable only to National Grid owned installations at 400/275/132 kV transmission system substations (including transformer low voltage connections, transformer tertiary connections and associated plant and apparatus).

This specification does not cover equipment used for Settlement Metering purposes.

2 REFERENCES

This specification makes references to and shall meet the requirements of the following documents:

National/ International Standards

IEC 255-23	Electrical Relays – Contact performance.
IEC 405	Nuclear Instruments: Constructional requirement to afford personal protection against ionising radiation.
IEC 617	Graphical symbols for diagrams. (≡BS3939)
ISO 14001	Environmental management systems – Specification with guidance for use
ISO 6428	Technical Drawings - Requirements for microfilming.
EN 60825	Radiation safety of laser products, equipment classification, requirements, and users guide (≡IEC 825).
BS EN 60688	Analogue Signals for Process Control Systems Part 1: Specification for Direct Current signals.
BS 4884	Specifications for technical manuals, Parts 1 and 2.
Miscellaneous Standards	
GS 43	Health and Safety Executive guidance note on Lithium Batteries.
MIL-HDBK-217F	Reliability prediction of electronic equipment.

National Grid Company Technical Specifications (NGTS)

The relationship between this specification and other specifications in the NGTS suite of documents is given in NGTS 2.24.

Other specifications not included in NGTS 2.24 that are applicable to this document are:

NGTS 3.12.1 48 V D.C. Supplies

NGTS 3.12.2 110 V D.C. Supplies

3 GENERAL REQUIREMENTS

The allocation and number of input and output interfaces required for a given hardware platform shall be in accordance with the requirements of the application, or contract for the implementation of the integrated functionality required by the NGTS SICAP functional specifications.

Where a given hardware platform is required to fulfil a number of functional requirements, then inputs and outputs shall be shared as appropriate.

Interfacing between manufacturers proprietary equipment items at bay level may, subject to agreement be performed using manufacturer's proprietary interfaces providing that overall functional and performance requirements are met.

The characteristics of all inputs and outputs inclusive of associated functionality shall enable the performance requirements given in the NGTS SICAP functional specification to be met.

Safety

No agreement given or implied shall relieve the manufacturer or supplier of any statutory safety obligations.

4 STATUS AND COMMAND INPUTS

Single point inputs

Informative: Single point inputs have an association with a single physical input, and are used where there is a need to detect only two discrete states, ie: an on / off condition. The input may be double pole switched, dependent on implementation criteria.

Single point inputs shall be used for receiving:

Plant status inputs.

Equipment status inputs.

Alarms inputs.

Command inputs.

The logical representation of single point inputs and typical implementation is shown in Figure 1.

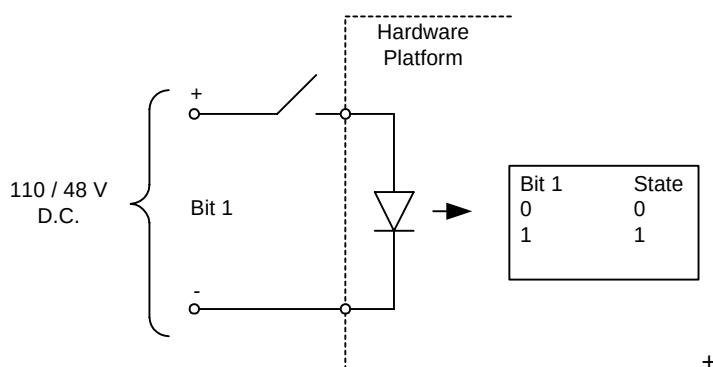


Figure 1 - Single Point Inputs

Full isolation shall be provided between single point inputs and all other circuits.

Where required by the application or contract full isolation shall be provided between single point inputs, or groups of single point inputs.

Double point inputs

Informative: Double point inputs have an association with two physical inputs and are used when there is a need to detect an on / off condition, and any intermediate state.

Double point inputs shall be used for receiving:

Plant status inputs.

Control and protection inputs.

The logical representation of double point inputs and typical implementation is shown in Figure 2.

Error! Not a valid link.

Figure 2 - Double Point Inputs

States 1 and 2 shall be used to represent normal conditions.

States 0 and 3 shall be classified as “DBI” (Don’t believe it).

Full isolation shall be provided between double point inputs and all other circuits.

Where required by the application or contract full isolation shall be provided between double point

inputs, or groups of double point inputs.

Control inputs

Informative: Control inputs have an association with one pulsed double pole switched physical input and are used for the control of plant and equipment where high security is required.

Control inputs shall be used for receiving inputs for:

Control of plant.

In / Out switching of protection and control functionality and equipment.

The signal presented to the input shall normally be double pole switched.

Control inputs will be signalled to the hardware platform by the double pole switches controlling the input closing fleetingly, either simultaneously, or in rapid sequence for a period of 2 seconds (or other period as specified by the application or contract).

The control input shall be considered active on the leading edge of the 2 second pulse, or other period as required by the contract or application.

The logical representation of control inputs and typical implementation is shown in Figure 3.

Full isolation shall be provided between control inputs and all other circuits.

Full isolation shall be provided between control inputs.

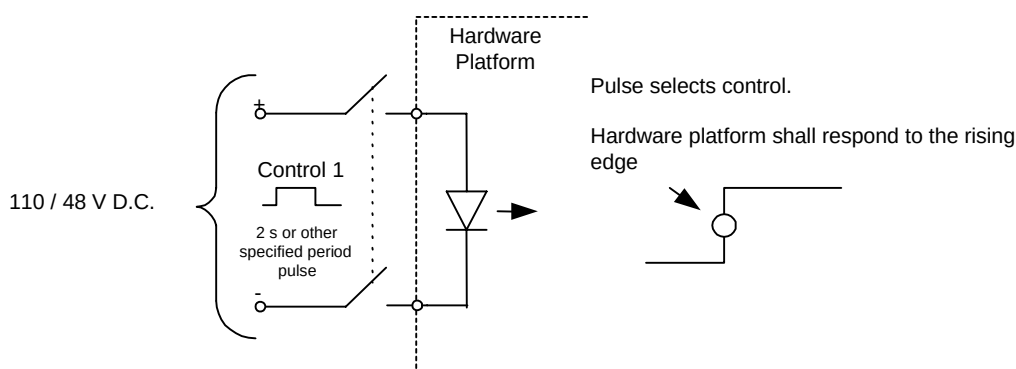


Figure 3 – Control Inputs

Transformer tap position inputs

Informative: Transformer tap position inputs have an association with multiple physical inputs that are logically associated.

The maximum number of physical inputs associated with each indication is 63; a lower value may be specified in the contract.

The logical representation of transformer tap position inputs and typical implementation is shown in Figure 4.

Transformer tap position inputs will be presented in a "1" of "n" format. The following represent invalid states:

More than one input is in the set state.

All inputs are in the reset state.

Full isolation shall be provided between transformer tap position input groupings and all other circuits.

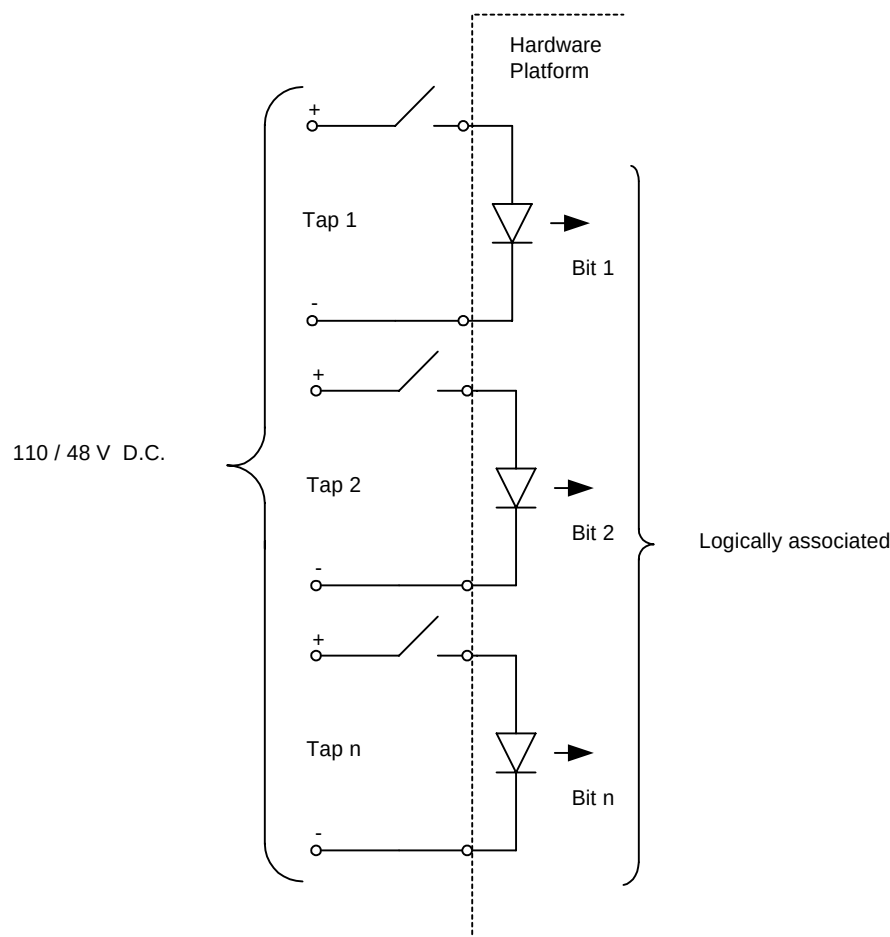


Figure 4 – Transformer Tap Position Inputs.

Change of state validation for status and command inputs

Validation filtering shall be applied to all inputs, two levels of validation are generally required, the second level is dependent on type.

First level validation – all status and command inputs

First level validation shall be provided for all physical inputs to suppress the effects of contact bounce and power frequency interference.

The filtering shall ensure that events of ≤ 2 ms duration are not registered.

Second level validation for single point inputs

A filter shall be applied to all state transitions, the new state shall only be reported if it persists for a configurable period of time.

The filter shall be configurable on a per input basis.