

ITS

Interface Test System



Testing Solutions
for
Electric Power



INCREASE SAFETY & EFFICIENCY

SAVE MONEY & SPACE

US Patent

Description

The SecuControl Interface Test System (ITS) is a new and innovative approach to test technology. The ITS provides safe access to control, protection and automation devices in the secondary circuit. An emphasis on quality, safety, space, and efficiency is the driving force behind the development of this system.

The system consists of an ITS test block and the respective STP test plug. The test block is flush-mounted into the panel and mirrors all the circuits of the device to which it is wired. The test plug is used for connection to any test set and insertion into the test block. The test plug (STP) contains shorting bars between pre-assigned poles to short CT circuits and keyed pins to prevent insertion into wrong block openings. These features facilitate the creation of test standards.

An automatic contact opening sequence takes place when insertion occurs. This sequence ensures proper isolation and restoration of the device being tested. Pull out the plug and all circuits are back in the original state.

Features

Increase Safety

- Automatic & reliable short-circuiting of CT circuits (make-before-break function)
- Ensures block and plug match with keying system
- Clear labeling on all sides
- Guarantees finger safety by limiting exposed metals
- Facilitates the development of test standards

Test Efficiently

- Reduce your setup time by pre-wiring plug to test set
- Establish testing routines for similar relays
- Plug & Test functionality once connected to test set
- Test during operation
- Low internal resistance

Save Panel Space

- Eliminate unused contacts with our modular design
- Reduce wiring by mounting test block next to relay

Save Money

- Avoid costly testing errors
- Order only the required amount of modules
- Use one plug with multiple blocks

Modular Design

The test block and test plug can contain any number of contact modules from 2 to 20. Each contact module is housed in a durable and flame retardant plastic shell that provides the best possible insulation. The test block has a low internal resistance of 2 mΩ and can be used with 1 A current transformers (CT's).



Plug Module

- Brass pins insulated with plastic insulation and keyed for proper insertion
- Long and short pins for automatic opening sequence
- CT circuits shorted by pre-assigned shorting bars between modules

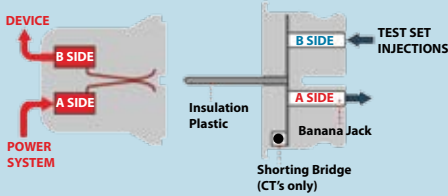
Block Module

- Two silver coated copper contacts connected to ring cable terminal blocks
- Pressure springs hold contacts in place and guarantee a lasting, high-quality connection
- Contact openings keyed for correct pin insertion

Functional Principle

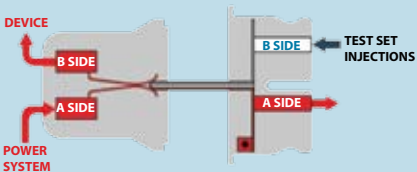
The ITS is designed to perform a make-shortening-break function. This function provides superior protection against open CT's. All CT contacts are automatically short-circuited, in one single step.

Normal Operation



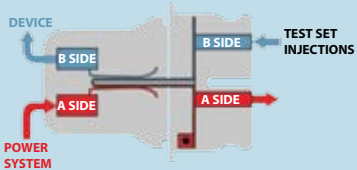
Current flows through the test block. Test plug is not connected.

Make-Shorting-Break



Test plug touches test block contacts. CT circuits are shorted upon first contact, while relay is still connected. Contact break occurs when plug is inserted further.

Test Operation



Test plug is fully inserted. Current flow is redirected via the test plug, relay is ready for test injections (through B-side of test plug). Test during operation is possible with the connection of a backup relay.

STP test plug

The STP test plug has been designed with the customer in mind. All of the testing characteristics reside in the plug. To open and close particular circuits at the right time, the pins are either longer or shorter at the customer's request. Shorting of CT circuits is achieved with a shorting bridge that connects designated plug contacts. Each plug module is equipped with brass pins and keyed to ensure it is inserted into the correct test block module. The compact plug design features banana jacks for easy connections to the test set.



STP test probe

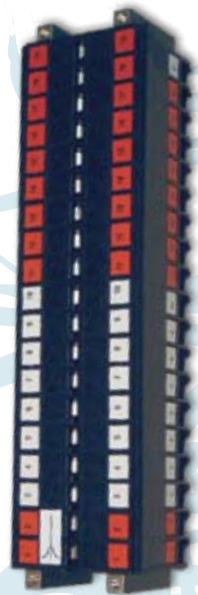
The STP test probe is used for monitoring and measurement of individual circuits in more advanced testing procedures. This probe provides greater flexibility while still maintaining the ITS safety advantages.



ITS test block

The ITS test block is built for quality long lasting connections to the intelligent electronic devices it services. Each block module contains two silver coated copper contacts. Ring cable terminals suitable for #10AWG cable are used in back of the test block modules for a quality connection. ITS block modules fit in the same size panel opening as knife-blade switches. With no modification to the panel, upgrading to the ITS has never been easier.

Each block module is physically identical, containing no customer configured test characteristics. Therefore changes will never need to be made to the test block in the panel.



Plug-Focused

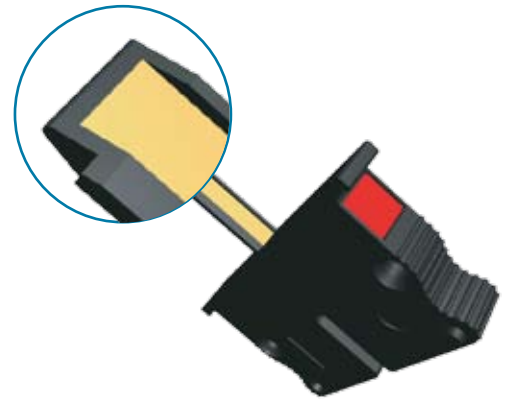
Future developments and features will be incorporated into the plug, while maintaining its compatibility with all test blocks. This allows your testing procedures and capabilities to advance in the future without having to adopt a totally new system. The SecuControl ITS was built for the present with the future in mind. What you put into place today will be in service for a long time to come, and will need to support the advancing technologies while evolving.

Keying System

Every individual plug module is keyed using the plastic insulation between pins. Each block module is also keyed and must have a matching opening for insertion to occur.

The ITS keying system provides multiple benefits:

- Eliminates matching mistakes completely
- Assists in developing switch standards for particular relays
- Provides a smooth and even connection



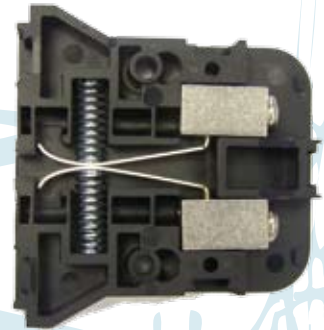
Automatic Operating Sequence

Upon test plug insertion, a 3 step automatic operating sequence is performed. First, the trip circuits are opened by the longer pins, followed by the shorter pins that automatically short the CT circuits via the shorting bridge. Voltage circuits are then redirected through the plug and test procedures are ready to begin. When the plug is withdrawn, the circuits are restored in reverse order.

The automatic operating sequence simplifies the job of the technician. Proper isolation and restoration of the device being tested is achieved every time. Costly false trips and errors in CT short-circuiting are no longer a concern with the ITS.

Low Internal Resistance - 2 mΩ

Due to its construction principle, the ITS test block has a constant contact pressure. The contact pressure of each block module is measured after the assembly.



CT Measurement Probe

The CT measurement probe is built for special applications in which CT circuits need to be accessed without automatic shorting. It can be entered into all test block modules. The CT measurement probe features fixed cables for a direct connection to a measuring instrument.




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Panel Mounted Delivery

Upon customer request, test blocks are delivered mounted in the fitting panel, ready for installation.

- Clean and exact panel cutouts
- Panels finished in color specified
- Test blocks delivered fully assembled in panel
- Allows for easy installation into cabinet



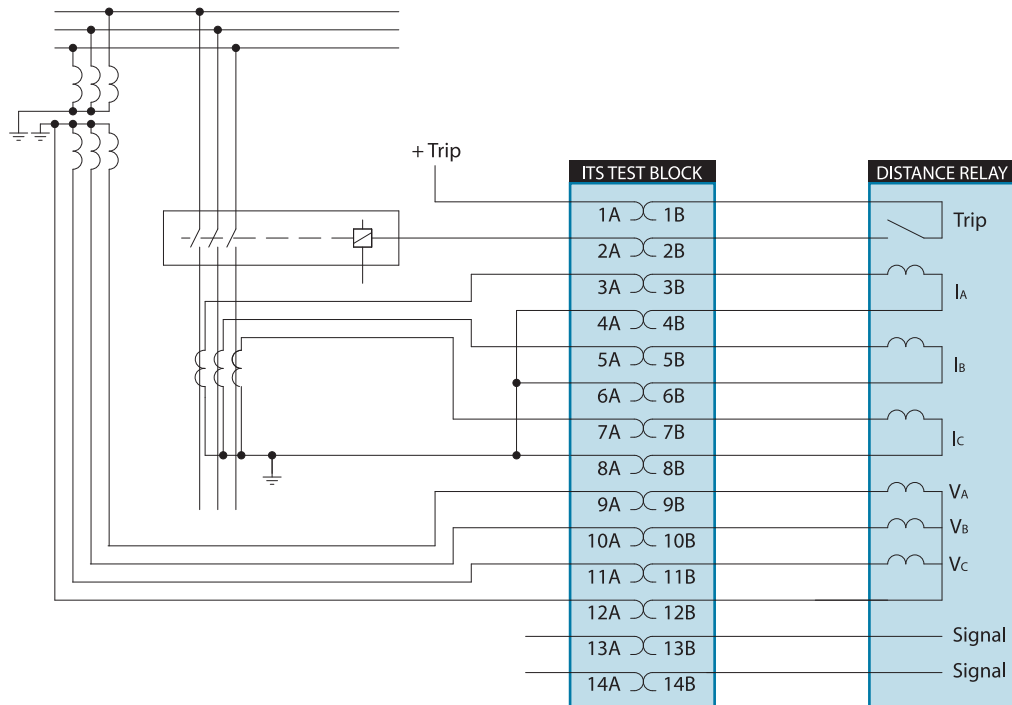
Test Case

The ITS test case is a solution for easy transport and storage of test plugs and other test accessories. It helps to ensure that all pieces are accounted for when testing begins & ends and protects all hardware from the elements.

Example Application ITS With Distance Relay

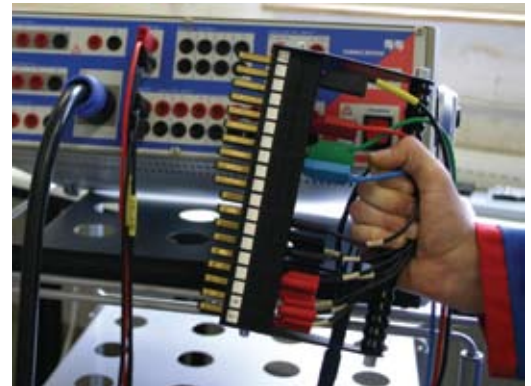
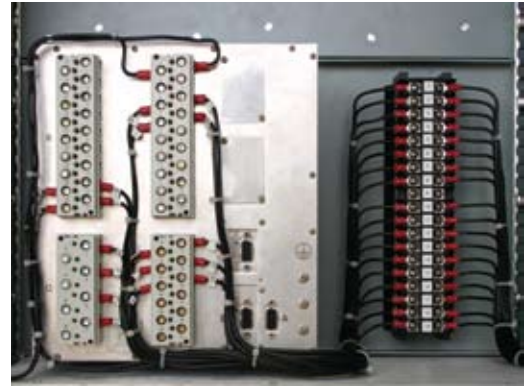
┌─┐ Shorting Bridge

ITS TEST PLUG													
1B	2B	3B	4B	5B	6B	7B	8B	9B	10B	11B	12B	13B	14B
1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A
LONG PINS								LONG PINS					



ITS TestBlock Technical Data

Current Withstand	30 A continuously 500 A for 1 sec
Maximum Voltage	600 V
Contact Resistance	typical max. 1.25 m Ω
Dielectric Withstand	5 kV rms for 1 min between adjacent contact pairs and between any contact pair and other metal parts 2.5 kV rms between open contacts, when plug is inserted IEC 60255-5:2000
Voltage Impulse	3 positive and 3 negative impulses of 5 kV peak, 1.2/50 μ s, 0.5 J between adjacent contact pairs and between all contact pairs and other metal parts IEC 60255-5:2000
IEEE SWC	4 kV peak fast transient 2.5 kV peak oscillatory IEEE C37.90.1:1989
Enclosure Protection	IP 20 IEC 60529:2001
UL94 flammability class	V-0 (test block and test plug plastic housing)



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