



Reyrolle
Protection
Devices

7SG26 – Tau

Autoreclose and synchronization

Answers for energy

7SG26 Tau

Autoreclose and synchronization



Fig 1. Tau relay in size 12 case

Description

The Tau range of auto-reclosing and synchronising relays cover all requirements for auto-reclosing in single-busbar, double busbar, one-and-a-half breaker and mesh substations, employing single-pole and three-pole switching. A number of models are available to meet different requirements.

The Tau auto-reclosing functionality can also be found built into Ohmega distance protection and Delta overcurrent protection relays.

The Tau 100 and 200 series relays provide all the functionality required for high-speed single-pole and three-pole autoreclose for application to a transmission feeder.

The Tau 400 and 500 series relays are suitable for transmission and distribution schemes, and provide all the functionality required for delayed automatic reclosure (DAR) of circuit breakers and isolators. These relays are particularly suited to systems with significant banked plant.

The relays have been designed to simplify, as much as possible, the intensive process of creating an autoreclose scheme. Clear setting ranges indicate deadtimes, close pulse and reclaim time delay settings. To assist commissioning, front fascia instruments indicate the progress through an autoreclose sequence.

The communication interface facilitates system operation by providing access to settings, event records, counters and a comprehensive command set, enabling remote control and fast post fault data retrieval.

Function Overview

The following features are available within the Tau range:

Reclosing options can be selected from
High-speed single-pole
High-speed three-pole
High-speed single-pole plus three-pole
Multishot delayed three-pole, with up to 4 recloses

Reclosing schemes can provide
Built-in check and system synchronising
External check and system synchronising
Automatic isolation
System reconfiguration
Additional features are
Pole discrepancy – alarm and trip
Ferro-resonance suppression – through isolation or earthing
VT failure alarm and blocking
Other features provided as standard are
Up to 43 digital inputs and 45 output relays – all fully programmable
Up to 32 LEDs for annunciation

Built-in logic eliminates the need for external auxiliary relays and associated wiring
Event recording of up to 500 time tagged records
Industry standard IEC 60870-5-103 protocol
Fibre optic rear communication ports plus front (fascia mounted) RS232 port for relay interrogation

Description of Functionality

Autoreclose

The autoreclose function has been designed to provide a rigorous assessment of the system and plant conditions before reclosing.

A number of abnormal conditions can be detected by the Tau, any of which will halt a reclose sequence:
Pole discrepancy – for circuit breaker, isolators and earth switch
Failed to close – for circuit breaker, isolators and earth switch
Failed to open – for circuit breaker, isolators and earth switch
DBI (don't believe it) – for circuit breaker, isolators and earth switch
Close on to fault
Slow circuit breaker
VT failure
Isolation failure
Trip relay reset failure

The close pulse will only be issued if the circuit breaker is open, there are no trips present and, on appropriate models, if the system synchronism conditions are met.

The relay contains scheme logic that allows input functions and output functions to be configured to meet the requirements of the scheme. This is achieved by a number of pre-programmed options and features which enable various sequences, together with appropriate timer mechanisms to allow effective control of the autoreclose process.

The Tau autoreclose relay is connected to the circuit breaker, protection and associated plant. The following features are available (depending upon model):

Monitoring of the state of the circuit breaker: CB Open, Closed and Indeterminate; per phase signals are provided. CB single-pole open and three-pole open outputs can be used as inhibits, e.g. for power swing blocking, zone 1 extension and DEF

VT alarms for line and bus side VTs
CB counter alarms

Start autoreclose flexibility: from 'Trip Reset' or, on Tau 100/200, 'Trip' or 'Trip and CB Open'

Three-pole trip select logic connection is provided to instruct protection to issue trips as three-pole

CB In Service and CB Memory prevent unwanted recloses if the circuit breaker is open or de-energised. Autoreclose is only allowed to proceed if the circuit breaker was in a closed position prior to the fault

Flexible latched or self reset Lockout

Flexible connection of the CB Auxiliary switches: can be normally open, normally closed or normally open and normally closed

Switching autoreclose In/Out can be from switches, communications, keypad or telecontrol pulses

Close Mode Selection, determining the autoreclose sequence employed, may be changed by a selector switch

The interconnection of this equipment allows the Tau to issue a number of alarms indicating system conditions and possible problems.

Check synchronising

Some Tau models provide support for external synchronising, others include check and system synchronising.

When synchronising is included in the Tau, VTs are provided to measure line and bus voltages. The Tau will automatically determine circuit breaker reclosure conditions: dead line close, dead bar close or check sync close. If one of these conditions exists and reclosure under this condition has been pre-selected by the user, then reclosure will be initiated.

The relay can automatically select check or system synchronising from measurements of the relative phase angles between line and bus voltages. The relay will prevent closure of the circuit breaker if the phase angle, slip frequency or the voltage magnitudes of the incoming or running voltages fall outside prescribed limits. The check and system synchronise functions have independent settings.

The relay includes split system detection. Following a system split, closure of the circuit breaker can be performed by either system synchronising parameters (typically 10°), or by the Close On Zero function, which takes account of the circuit breaker close time. Alternatively, lockout may be selected.

Ferroresonance suppression logic

With certain substation configurations, at extra high voltage levels, ferroresonance can cause damage to transformers. Ferroresonance is usually eliminated by opening the

transformer isolator or closing an earth switch. Both of these methods disrupt the resonant primary circuit and damp the resonance. The Tau 503 provides two logic schemes that enable this to occur as an integral part of the autoreclose scheme.

The first scheme (F3) opens then closes the transformer isolator in order to remove the resonance. The second scheme (F4) can be used if the isolators cannot break the resonant voltages, and closes then opens the line earth switch in order to achieve the same result.

Ferroresonance must be detected with a suitable relay, e.g. XR309.

Monitoring

Instrumentation

On models with synchronising analogue, values can be displayed on the LCD screen. In addition these values can be obtained via the IEC 60870-5-103 communications.

Line and bus voltage magnitudes

Line and bus frequencies

Phase difference

Slip frequency

Status inputs

Output contacts

Flag indication

Either 16 or 32 Flag LEDs are provided, which the user can assign to indicate status. The number of LEDs depends on the case size, see Technical Information

Data storage and communication

Sequence of event records

Up to 500 events are stored and time tagged to 1ms resolution. These are available via the communications.

CB Close records

Textual records of the last 10 closes are available from the Tau fascia with time and date, measured quantities (for models with synchronising) and status.

Waveform recorder

Waveform storage provides five 1 second records. Within the record, the amount of pre-fault storage is configurable. The recorder is triggered from a close operation.

In all models, the records contain the digital input and output signals. In models with synchronising analogue waveforms of the line and bus voltages are also recorded.

Communications

Two fibre-optic communications ports are provided on the rear of the relay. They are optimised for 62.5/125µm multi-

mode glass-fibre. Connectors are of the BFOC/2.5 (ST®) bayonet type.

In addition users may interrogate the Tau locally with a laptop PC and the RS232 port on the front of the relay. The Tau uses IEC 60870-5-103 as its communications protocol.

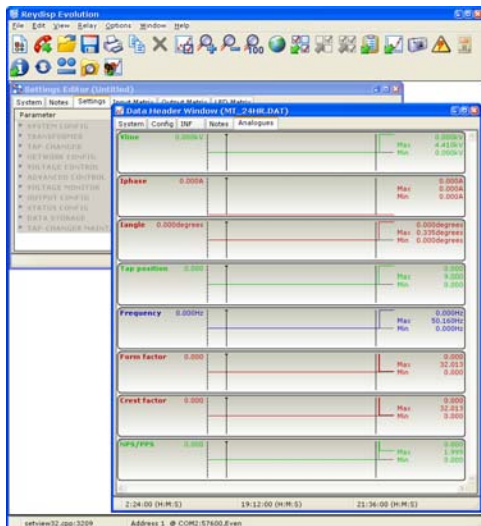


Fig 2. Waveform record in reydisp Evolution

Reydisp Evolution is common to the entire range of numeric products. It provides a means for the user to apply settings to the Tau, interrogate settings and retrieve waveforms from the Tau

Model Selection

Tau 100/200 series

Tau 100/200 series relays provide high-speed single-pole and three-pole reclosing. They are typically applied to transmission systems and any application where single-pole reclosing is required.

Eight different sequences are possible, with up to 2 reclose shots followed by lockout:

- Off
- Single-pole
- Three-pole
- Single-pole, or three-pole
- Single-pole followed by three-pole, or three pole
- Two single-pole
- Two three-pole
- Two single-pole, or two three-pole, or single-pole followed by three-pole

Tau 100

Support for external synchronising relay

Tau 200

Integral check and system synchronising

Tau 400/500 series

Tau 400/500 series relays provide multi-shot three-pole delayed reclosing. The number of recloses before lockout can be programmed between 1 and 4.

Tau 400

No support for synchronising

Tau 401

Support for external synchronising relay

Tau 500

Integral check and system synchronising

Auto Switching Tau 500 Functionalty

In addition to the following relays in the Tau 500 series also provide auto-switching functionality for a variety of applications:

Tau 501

Control of feeder disconnector on banked feeder/transformer connections.
Limited applications.

Tau 502

Control of up to four isolators. Typically applied to distribution systems – mesh substations, 1½ breaker substations and applications requiring control of isolators or earth switches on both sides of the circuit breaker. (UK: TPS12/10)

Tau 503

Control of up to four isolators, two earth switches and with ferroresonance suppression logic. Typically applied to mesh substations, 1½ breaker substations and applications requiring control of isolators on both sides of the circuit breaker. (UK: NGTS3.24.63)

Tau 504

Control of two isolators on banked connections. Typically feeder and locally banked transformer.

Tau 506

Control of transformer HV isolater for ferroresonance suppression (F3). Transformer LVCB DAR. Typically for transformer feeders with long overhead lines.

Tau 510

As Tau 500 but with enhanced interface to allow use with TPS 6/ 10003 synchronising schemes.

Application

When applying Tau relays to reclosing schemes the general requirement is one relay per circuit breaker.

Plain overhead line applications

The Tau 400 has no synchronising support. It is typically applied to radial distribution systems where no synchronising is required. The Tau 100 and 401 relays (Figure 2) interface with the protection and an external synchronising relay

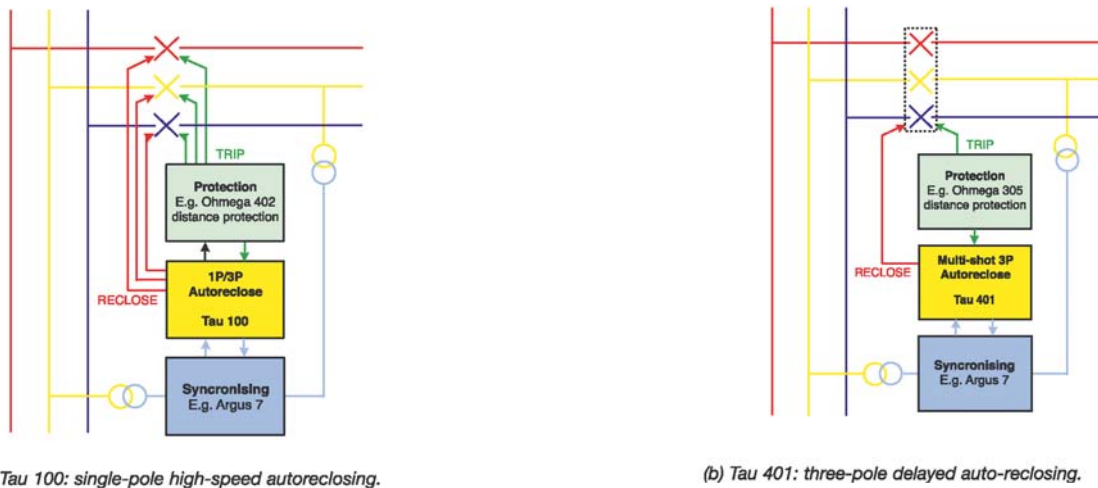


Fig 3. a & b Tau auto reclose with external synchronising

The Tau 200 and 500 relays (Figure 3) provide a synchronising function that includes dead line close, dead bus close, check synchronising, system synchronising and close on zero functions.

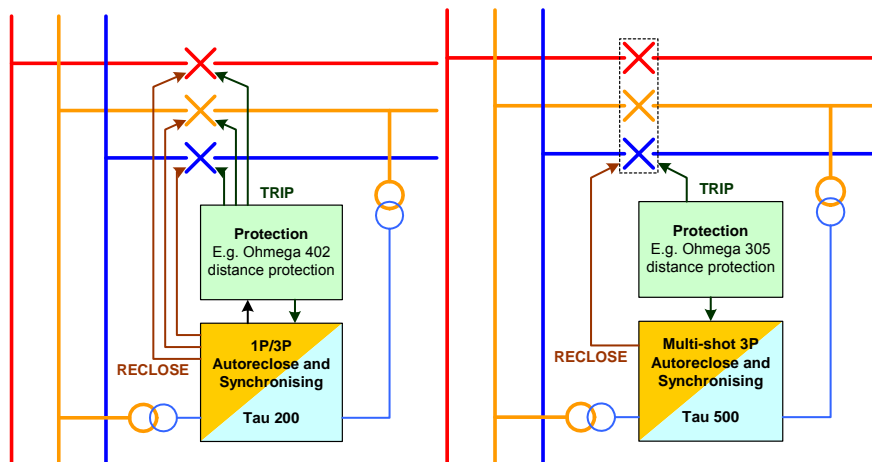


Fig 4. a & b Tau auto reclose with integral check and system synchronising
Auto-isolation

The Tau 501 and 504 provide control of isolators for banked plant, and can be used in a variety of auto-isolation schemes, usually for teed feeders.

The Tau 501 and 504 are typically used when a transformer is teed off a feeder from a single or double busbar (Figure 6). The Tau 504, being able to control 2 isolators, can be used in situations where the transformer and feeder have isolators. The Tau 501 is limited to feeder isolator control.

- For a fault on the feeder, if it is an overhead line, the sequence is: trip, reclose; and if another trip occurs, isolate the line, reclose.
- For a fault on the feeder, if it is a cable, the sequence is: trip, isolate the cable, reclose.
- For a fault on the transformer the circuit breaker trips, the transformer isolator is opened, then the circuit breaker is closed again. (A separate reclosing relay controls the circuit breaker on the other side of the transformer.)

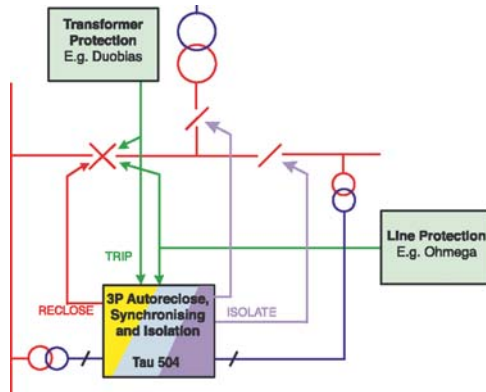


Fig 6. Auto-isolation for teed feeders – single or double busbar

Switch-and-a-half and mesh substations

The Tau 502 and 503 are applicable to any application where isolators on each side of the circuit breaker must be controlled. Switch-and-a-half substations and mesh substations are the most common example of these. These relays can control up to two isolators on each side of the circuit breaker.

In the switch-and-a-half application (Figure 7) Tau 502s can be used with the centre circuit breaker, while Tau 500s are used for the circuit breakers at the outsides of the diameter. If single-pole switching is required Tau 200s can be used throughout, however, auto-isolation is not provided in these.

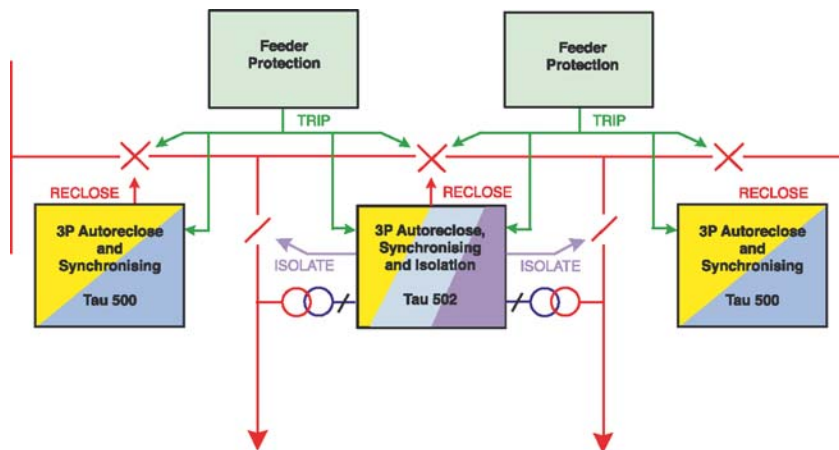


Fig 7. Switch-and-a-half reclosing using TAU 500 and 502

Reclosing in a mesh substation (Figure 8) is similar to a teed feeder, except there is a need for isolator control on both sides of the circuit breaker. If all breakers are closed prior to a fault, blocking logic creates a priority such that one Tau will ensure the correct circuits are isolated before closing its circuit breaker, thus releasing the next Tau to do the same. If a circuit breaker is open prior to a fault, the lower priority Tau will not be blocked, and will carry out the necessary isolation.

The Tau 503 contains logic differences and ferroresonance suppression logic, compared with the Tau 502, making it particularly suited to transmission mesh substations.

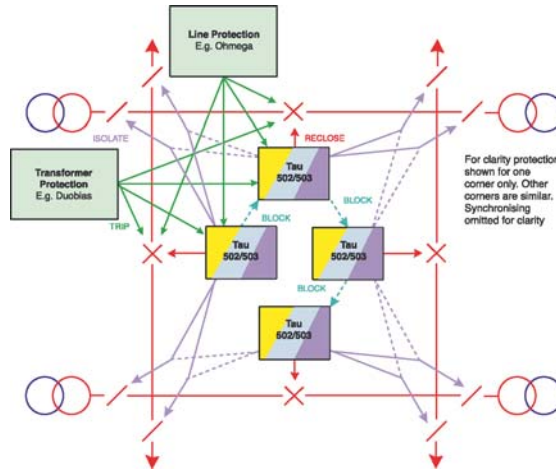


Fig 8. Four-switch mesh reclosing using TAU 502 or 503

Application of Tau 502 to single-switch meshes is particularly easy, because the Tau is associated with a circuit breaker, rather than a mesh corner, as shown in Figure 9.

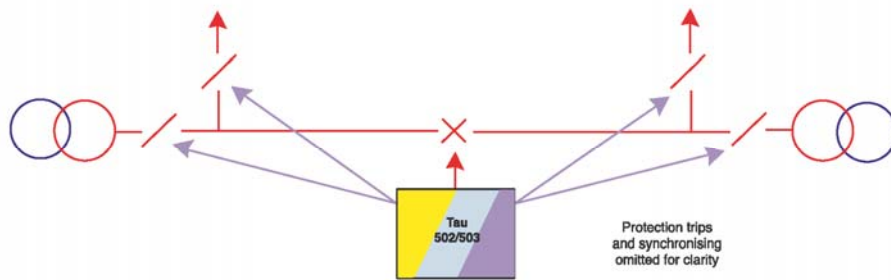


Fig 9. Single-switch mesh reclosing using TAU 502 or 503

When there are two transformers per corner, one transformer isolator is controlled by each Tau on the adjacent sides, Figure 10.

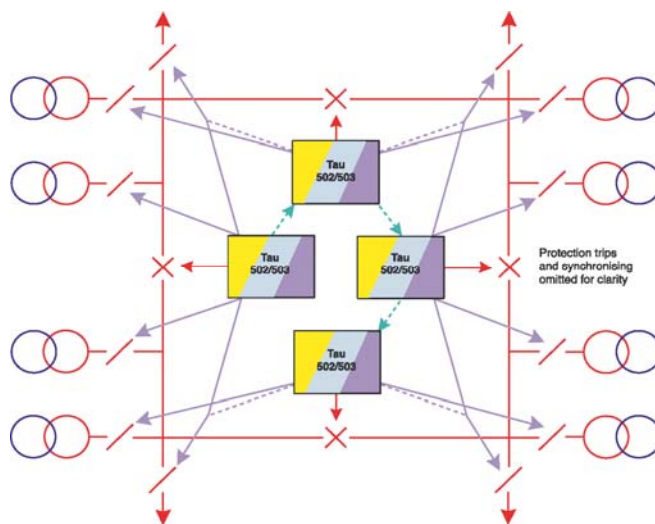


Fig 10. Four-switch mesh reclosing with 2 transformers per corner

Technical information

General accuracy Reference conditions

Parameter	Reference or value
General	IEC 60255-3
Auxiliary Supply	Nominal
Frequency	50 / 60 Hz
Ambient Temperature	20 °C

General accuracy

Parameter	Value
Voltage level	±1% (range 7V to 132V)
Frequency	typically ±10mHz
Phase angle	typically ±1°

Accuracy influencing factors

Temperature	
-10 °C to +55 °C	≤ 5% variation
Frequency	
47 Hz to 52 Hz	Setting: ≤ 1% variation
57 Hz to 62 Hz	Operate Time: ≤ 1% variation
	Phase Angle: ≤ 1% variation

Characteristic energising quantity

AC Voltage	63.5 / 110 V rms
Frequency	50 / 60 Hz

Auxiliary energising quantity DC Power supply

Nominal voltage	Operating range
48, 110 V	37.5 to 137.5
220 V	178.0 to 280.0

DC Status inputs

Nominal voltage	Operating range
30, 34 V	18.0 to 37.5 V dc
48, 54 V	37.5 to 60.0 V dc
110, 125 V	87.5 to 137.5V dc
220, 250 V	175.0 to 280.0V dc

The status voltage need not be the same as the main energising voltage.

Electricity Association ESI48-4

The 30/34V and 48/54V inputs meet the requirements of ESI48-4 ESI 1. However, the 110/125V and 220/250V inputs will operate with a DC current of less than 10mA. If 110/125V or 220/250V inputs compliant with ESI48-4 ESI 1 are required, a Tau with 48/54V status can be supplied with external dropper resistors as follows:

Nominal voltage	Value	Wattage
110, 125 V	2k7 ± 5%	2.5 W

Status input performance

Parameter	Value
Minimum DC current for operation (30/34V and 48/54V inputs only)	10 mA
Reset/Operate Voltage Ratio	≥ 90 %
Typical response time	< 5 ms
Typical response time when used to energise an output relay contact	< 15 ms
Minimum pulse duration	40 ms

Each status input has an associated timer that can be programmed to give time delayed pick-up and time delayed drop-off. When set to a minimum of 20ms the status inputs will provide immunity to an AC input signal and will not respond to the following:

- 250V RMS 50/60 Hz applied for two seconds through a 0.1µF capacitor.
- 500 V RMS 50/60 Hz applied between each terminal and earth.
- Discharge of a 10 µF capacitor charged to maximum DC auxiliary supply voltage.

Protection Elements

Autoreclose

Level	
Deadtime (1P)	0.05s to 100s step 0.05s
Deadtime (3P)	0.1s to 100s step 0.1s
Close pulse	0.1s to 20s step 0.1s
Reclaim time	1s to 600s step 1s
Accuracy	setting ±1% or ±10ms

Check and system synchronising

Live and dead voltage level	
Dead line/bus	5% to 150% step 5%
Live line/bus	10% to 155% step 5%
Accuracy	Live operate: live setting ± 1% Live reset: dead setting ± 1% Dead operate: dead setting ± 1% Dead reset: live setting ± 1%
Undervoltage level	
Setting line/bus	0 to 150% step 5%
Accuracy	Operate: Setting ± 1% Reset: < 104% operate level
Voltage difference level	
Setting	0 to 100% step 5%
Accuracy	Operate: setting ±2% or ±0.5V Reset: > operate level – 2V (typically > 90% operate)
Slip frequency	

Setting	0 to 2000mHz step 5mHz
Accuracy	Operate: setting $-15\text{mHz} +0\text{mHz}$ Reset: operate $-0\text{mHz} +15\text{mHz}$
Check sync., system sync. phase angle	
Setting	5 to 90° step 5°
Accuracy	Operate: setting $-3^\circ +0$ Reset: operate $-0 +3^\circ$
System split phase angle	
Setting	0 to 175° step 5°
Accuracy	Operate: setting $\pm 1.5^\circ$ Reset: latched
Timer	
Setting	0 to 100s step 0.1s
Accuracy	setting $\pm 1\%$ or $\pm 10\text{ms}$

Thermal Withstand Continuous / Limited period

250 V rms	Continuous
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Burdens AC Voltage inputs

63.5V	$\leq 0.05 \text{ VA}$
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Note: Burden is measured at nominal rating

Auxiliary supply

TAU 100/40x	
Quiescent	9 W
Maximum	14 W
TAU 200/50x	
Quiescent	11 W
Maximum	14 W

Output Contact

Contact rating to IEC 60255-0-2.

Carry continuously	5 A AC or DC
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Make and carry (Limits: L/R $\leq 40\text{ms}$ and V $\leq 300 \text{ volts}$)

0.5 sec	20 A AC or DC
0.2 sec	30 A AC or DC

Break (Limits: $\leq 5 \text{ A}$ or $\leq 300 \text{ volts}$)

ac resistive	1250 VA
ac inductive	250 VA @ PF ≤ 0.4
dc resistive	75 W
dc inductive	30 W @ L/R $\leq 40 \text{ ms}$

	50 W @ L/R $\leq 10 \text{ ms}$
Minimum number of operations	1000 at maximum load
Minimum recommended load	0.5 W, limits 10 mA or 5 V

Minimum number of operations	1000 at maximum load
Minimum recommended load	0.5 W, limits 10 mA or 5 V

Mechanical

Vibration (Sinusoidal) IEC 60255-21-1 Class 1

0.5 gn, Vibration response	$\leq 5\%$ variation
1.0 gn, Vibration endurance	

Shock and bump IEC 60255-21-2 Class 1

5 gn, Shock response, 11ms	$\leq 5\%$ variation
15 gn, Shock withstand, 11ms	
10 gn, Bump test, 16ms	

Seismic IEC 60255-21-3 Class 1

1 gn, Seismic Response	$\leq 5\%$ variation
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Mechanical classification

Durability	In excess of 10^6 operations
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Electrical Tests

Transient overvoltage IEC 60255-5

Between all terminals and earth or between any two independent circuits without damage or flash-over	5kV 1.2/50 μs 0.5 J
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Insulation IEC 60255-5 RMS levels for 1 minute

Between all terminals and earth	2.0 kV
Between independent circuits	2.0 kV
Across normally open contacts	1.0 kV

Immunity Auxiliary DC supply IEC 60255-11

Allowable superimposed ac component	≤ 12% of dc voltage
Allowable breaks/dips in supply (collapse to zero from nominal voltage)	≤ 20 ms

High frequency disturbance IEC 60255-22-1 Class III

2.5kV, Longitudinal mode	≤ 3% variation
1.0kV, Transverse mode	

Electrostatic discharge IEC 60255-22-2 Class III

8kV, Contact discharge	≤ 5% variation
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Fast transient IEC 60255-22-4 Class IV

4kV, 5/50ns, 2.5 kHz, repetitive	≤ 3% variation
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Radio frequency interference IEC 60255-22-3

10 V/m, 80 to 1000 MHz	≤ 5% variation
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Environmental

Temperature IEC 68-2-1/2

Operating	-10 °C to +55 °C
Storage	-25 °C to +70 °C

Humidity IEC 68-2-3

Operational test	56 days at 40 °C and 95% RH
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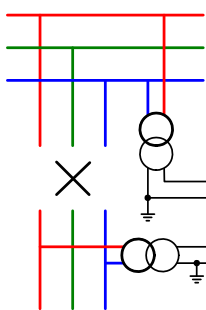
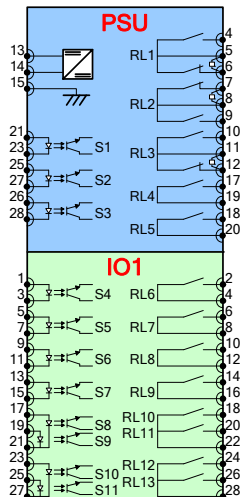
Application

Additional Status Input and Output Relay Options

TA1-XXX-xB

(no additional I/O)

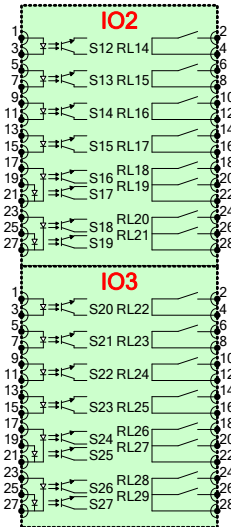
total 11 status inputs,
13 output relays (3c/o, 10no)



Module AN1 is only provided
on TA1-200 and 50x models

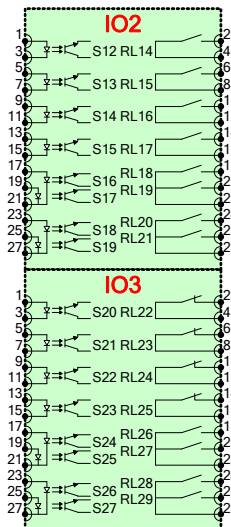
TA1-XXX-xD

total 27 status inputs,
29 output relays (3c/o, 26no)



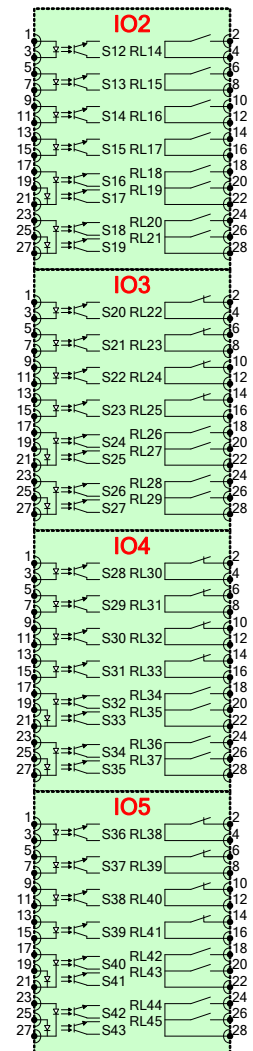
TA1-XXX-xG

total 27 status inputs,
29 output relays (3c/o, 22no, 4nc)



TA1-XXX-xM

total 43 status inputs,
45 output relays (3c/o, 42no)



TAU series		100, 40x		200, 50x		503
I/O options		B,C,H	D,G	B	C,D,G,H	M
Case Size		E8	E12	E8	E12	E16
Module position	A	PSU	PSU	PSU	PSU	PSU
	B	IO1	IO1	IO1	IO1	IO1
	C	IO2	IO2	AN1	IO2	IO2
	D	CPU	IO3	CPU	IO3	IO3
	E		Spare		AN1	IO4
	F		CPU		CPU	IO5
	G					ANI
	H					CPU

The amount of I/O together with the TAU series (100, 200, 40x, 50x) will determine the required case size – see the table to the left.

Modules in *italics* (IO2, IO3) are options.

Case Dimensions

The Tau is supplied in either a size 8, 12 or 16 case, see below.

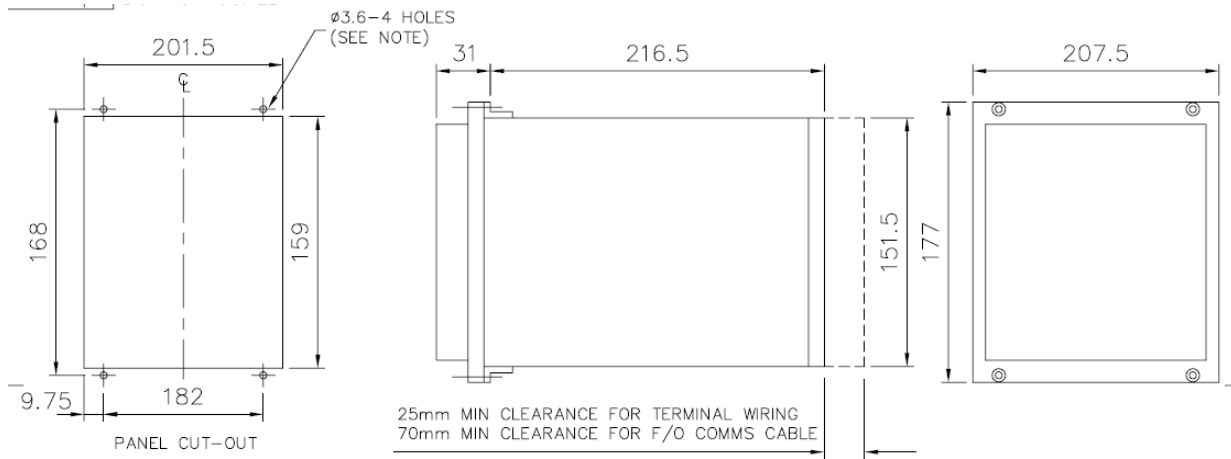


Fig 11. Size 8 Case

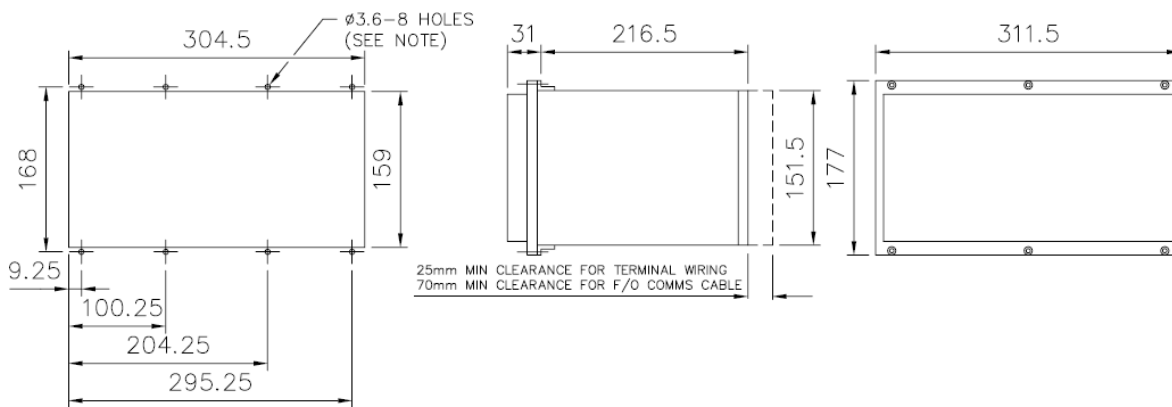


Fig 12. Size 12 Case

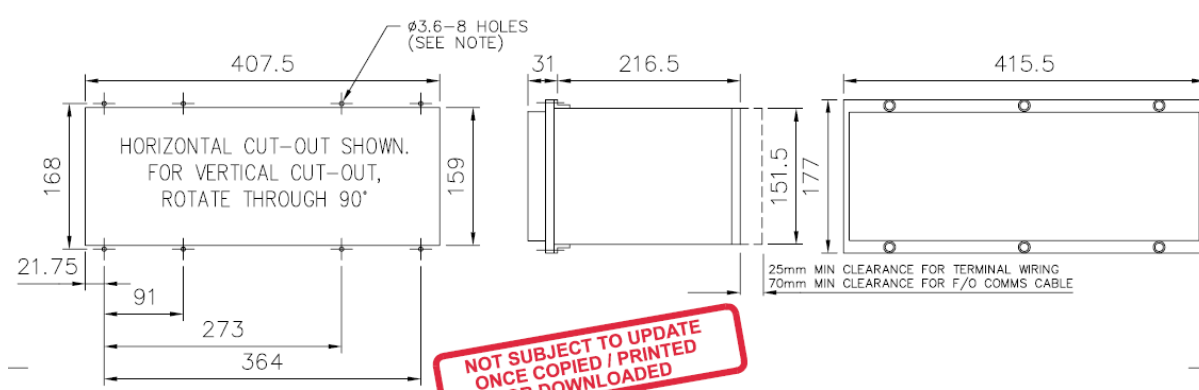


Fig 13. Size 16 Case

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Ordering Information - TAU 7SG26

Product description	Variants	Order No.
<p>TAU (100 series)</p> <p>Autoreclose relay without check synchronising.</p> <p><u>Relay type</u> 100 series - High speed reclosing with external sync input</p> <p><u>Standard functionality</u></p> <p><u>Reclose type</u> - Low/high-speed single-pole . - Low/high-speed three-pole reclose</p> <p><u>Reclosing schemes</u> - External synchronising input</p> <p><u>Auxiliary functions</u> - Pole discrepancy</p> <p><u>Functionality</u> Model 100 - Standard functionality</p> <p><u>Auxiliary supply /binary input voltage</u> 48/110 V DC auxiliary, 30 V DC binary input 48/110 V DC auxiliary, 48 V DC binary input ¹⁾ 48/110 V DC auxiliary, 110 V DC low burden binary input 220 V DC auxiliary, 110 V DC low burden binary input 220 V DC auxiliary, 220 V DC low burden binary input</p> <p><u>I/O range</u> 27 Binary Inputs / 13 Binary Outputs (incl. 3 changeover)</p> <p><u>Frequency</u> Not applicable</p> <p><u>Voltage inputs</u> Not applicable</p> <p><u>Housing size</u> Case size E8 (4U high)</p> <p><u>Communication interface</u> Fibre optic (ST-connector) / IEC 60870-5-103</p>	<p>7 S G 2 6 □ □ - 0 □ □ □ 0 - □ □ □ 0</p> <p>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</p> <p>1</p> <p>0</p> <p>C D E F G</p> <p>H</p> <p>0</p> <p>0</p> <p>E</p> <p>A</p>	

¹⁾ High burden 110/125V & 220/250V binary inputs compliant with ESI48-4 ESI 1 available via external dropper resistors with 48V binary input version

110/125 V application, order combination of the following resistor boxes to suit number of binary inputs

2512H10064 (9 inputs, 110V)

2512H10065 (5 inputs, 110V)

2512H10066 (1 inputs, 110V)

220/250 V application, order resistor box 2512H10066 in addition

2512H10067 (5 inputs, 220V)

2512H10068 (1 inputs, 220V)

Ordering Information - TAU 7SG26

Product description	Variants	Order No.
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TAU (200 series)

Autoreclose relay with check synchronising.

Relay type

200 series - High speed reclosing with check and system synchronising

Standard functionality

Reclose type

- Low/high-speed single-pole reclose
- Low/high-speed three-pole reclose

Reclosing schemes

- Check and system synchronising

Auxiliary functions

- Pole discrepancy
- VT failure alarm (and blocking)

Functionality

Model 200 - Standard functionality

Auxiliary supply /binary input voltage

- 48/110 V DC auxiliary, 30 V DC binary input
- 48/110 V DC auxiliary, 48 V DC binary input ¹⁾
- 48/110 V DC auxiliary, 110 V DC low burden binary input
- 220 V DC auxiliary, 110 V DC low burden binary input
- 220 V DC auxiliary, 220 V DC low burden binary input

I/O range

27 Binary Inputs / 13 Binary Outputs (incl. 3 changeover)

Frequency

- 50Hz
- 60Hz

Voltage inputs

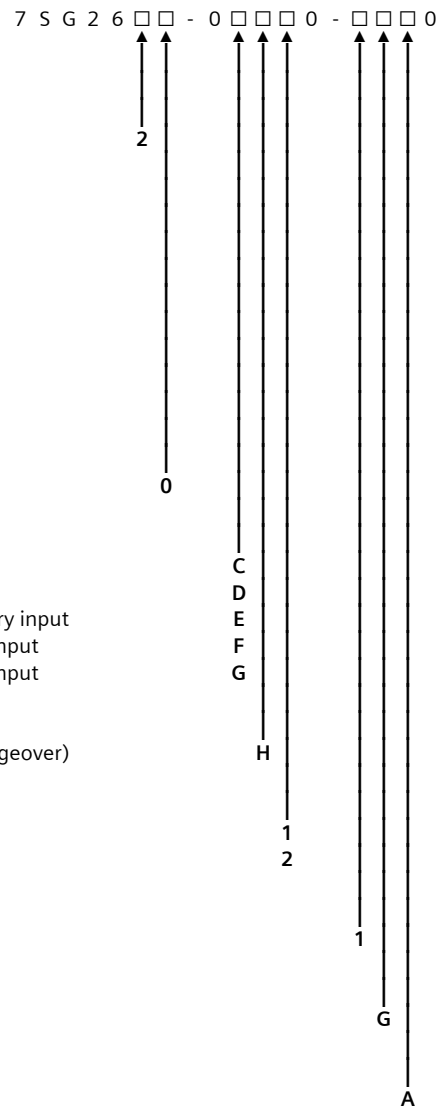
63.5/110 V AC

Housing size

Case size E12 (4U high)

Communication interface

Fibre optic (ST-connector) / IEC 60870-5-103



¹⁾ High burden 110/125V & 220/250V binary inputs compliant with ESI48-4 ESI 1 available via external dropper resistors with 48V binary input version

110/125 V application, order combination of the following resistor boxes to suit number of binary inputs

- 2512H10064 (9 inputs, 110V)
- 2512H10065 (5 inputs, 110V)
- 2512H10066 (1 inputs, 110V)

220/250 V application, order resistor box 2512H10066 in addition

- 2512H10067 (5 inputs, 220V)
- 2512H10068 (1 inputs, 220V)

Ordering Information - TAU 7SG26

Product description	Variants	Order No.
<p>TAU (400 series)</p> <p>Autoreclose relay without check synchronising.</p> <p><u>Relay type</u> 400 series - Delayed autoreclose</p> <p><u>Standard functionality</u> <u>Reclose type</u> - Multi-shot delayed three-pole reclose</p> <p><u>Auxiliary functions</u> - Pole discrepancy</p> <p><u>Functionality</u> Model 400 - Standard functionality Model 401 - Standard functionality plus</p> <p><u>Reclosing schemes</u> - External synchronising input</p> <p><u>Auxiliary supply /binary input voltage</u> 48/110 V DC auxiliary, 30 V DC binary input 48/110 V DC auxiliary, 48 V DC binary input 1) 48/110 V DC auxiliary, 110 V DC low burden binary input 220 V DC auxiliary, 110 V DC low burden binary input 220 V DC auxiliary, 220 V DC low burden binary input</p> <p><u>I/O range</u> 11 Binary Inputs / 13 Binary Outputs (incl. 3 changeover)</p> <p><u>Frequency</u> Not applicable</p> <p><u>Voltage inputs</u> Not applicable</p> <p><u>Housing size</u> Case size E8 (4U high)</p> <p><u>Communication interface</u> Fibre optic (ST-connector) / IEC 60870-5-103</p>	<p>7 S G 2 6 □ □ - 0 □ □ □ 0 - □ □ □ 0</p> <p>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</p> <p>4</p> <p>0</p> <p>1</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p> <p>B</p> <p>0</p> <p>0</p> <p>E</p> <p>A</p>	

1) High burden 110/125V & 220/250V binary inputs compliant with ESI48-4 ESI 1 available via external dropper resistors with 48V binary input version

110/125 V application, order combination of the following resistor boxes to suit number of binary inputs

- 2512H10064 (9 inputs, 110V)
- 2512H10065 (5 inputs, 110V)
- 2512H10066 (1 inputs, 110V)

220/250 V application, order resistor box 2512H10066 in addition

- 2512H10067 (5 inputs, 220V)
- 2512H10068 (1 inputs, 220V)

Ordering Information - TAU 7SG26

Product description	Variants	Order No.
<p>TAU (500 series)</p> <p>Autoreclose relay with check synchronising.</p> <p><u>Relay type</u> 500 series - Multi-shot autoreclose with check and system synchronising</p> <p><u>Standard functionality</u> <u>Reclose type</u> - Multi-shot delayed three-pole reclose</p> <p><u>Reclosing schemes</u> - Check and system synchronising</p> <p><u>Auxiliary functions</u> - Pole discrepancy - VT failure alarm (and blocking)</p> <p><u>Functionality</u> <u>Model 500 - Standard functionality</u> - 'J' unit equivalent</p> <p><u>Model 502 - Standard functionality plus</u> <u>Reclosing schemes</u> - 4 isolator control for sub-transmission mesh - TPS 12/10 equivalent Only supplied as part of engineered system 2)</p> <p><u>Model 503 - Standard functionality plus</u> <u>Reclosing schemes</u> - 4 isolator control for transmission mesh</p> <p><u>Auxiliary functions</u> - Earth switch/transformer isolator - Ferro-resonance suppression - NGTS 3.24 scheme Only supplied as part of engineered system 2)</p> <p><u>Model 504 - Standard functionality plus</u> <u>Reclosing schemes</u> - 2 isolator control for Teed feed</p> <p><u>Model 506 - Standard functionality plus</u> <u>Reclosing schemes</u> - Transformer isolator control</p> <p><u>Auxiliary functions</u> - Ferro-resonance suppression</p> <p><u>Model 510 - Standard functionality plus</u> but with revised connections for use with traditional synchronising and control schemes</p> <p><u>Auxiliary supply /binary input voltage</u> 48/110 V DC auxiliary, 30 V DC binary input 48/110 V DC auxiliary, 48 V DC binary input 1) 48/110 V DC auxiliary, 110 V DC low burden binary input 220 V DC auxiliary, 110 V DC low burden binary input 220 V DC auxiliary, 220 V DC low burden binary input</p>	<p>5</p> <p>0</p> <p>2</p> <p>3</p> <p>4</p> <p>6</p> <p>7</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p>	<p>7 S G 2 6 □ □ - 0 □ □ □ 0 - □ □ □ 0</p> <p>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</p> <p>0 B E</p> <p>G G</p> <p>M J</p> <p>D G</p> <p>B E</p> <p>D G</p>

Continued Over

Product description	Variants	Order No.
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TAU (500 series)

7 S G 2 6 □ □ - 0 □ □ □ 0 - □ □ □ 0

I/O range

- 11 Binary Inputs / 13 Binary Outputs (incl. 3 changeover)
- 27 Binary Inputs / 29 Binary Outputs (incl. 3 changeover)
- 27 Binary Inputs / 29 Binary Outputs (incl. 3 changeover, 4 normally closed)
- 43 Binary Inputs / 45 Binary Outputs (incl. 3 changeover)

Frequency

- 50Hz
- 60Hz

Voltage inputs

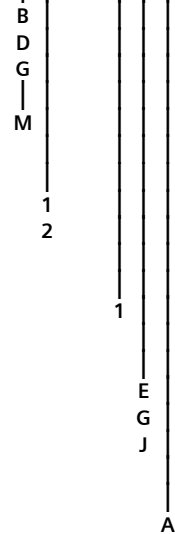
63.5/110 V AC

Housing size

- Case size E8 (4U high)
- Case size E12 (4U high)
- Case size E16 (4U high)

Communication interface

Fibre optic (ST-connector) / IEC 60870-5-103



1) High burden 110/125V & 220/250V binary inputs compliant with ESI48-4 ESI 1 available via external dropper resistors with 48V binary input version
 110/125 V application, order combination of the following resistor boxes to suit number of binary inputs
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 220/250 V application, order resistor box 2512H10066 in addition
 2512H10067 (5 inputs, 220V)
 2512H10068 (1 inputs, 220V)

2) Solutions for mesh corner autoreclose are available as engineered schemes and price supplied on request

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