

Features

- Rugged modular construction
- High reliability double action contacts for high operate speed and low bounce
- 5 heavy duty contact versions available in a range of Make and Break combinations
- Contacts picked up for healthy supply condition contacts
- High visibility electro-mechanical flag indication drops to indicate supervision alarm condition
- Optional supervision Healthy LED
- Rated operate voltages available for 30/32, 48, 110, 125, 220, 240 or 250 Volts DC nominal auxiliary supplies
- Low burden
- Rack or flush mounting
- Compact size 2 draw out case
- M4 screw terminals
- Optional gold plated contacts suitable for low currents
- Optional custom labeling
- Simple to specify and order

Introduction

The XR range represents a new generation of high reliability electro-mechanical relays for power utility protection and control applications.

The XR is built on the Alpha relay platform providing high performance and reliability while reducing production and supply lead times.

Application of the XR supervision relays ensures reliable operation of up to 5 output contacts in a compact size 2 draw out case. The unique patented design and topology ensures minimal contact bounce.



Alpha XR5 Supervision Relay
Patent pending - 2007272292

Application

Made in Australia

The Alpha XR Series Relays are low burden electro-mechanical supervision relays for application on high security tripping and auxiliary supply circuits.

The Alpha XR relays have been designed to provide a balance of low burden to minimize the possibility of circuit breaker mal-operation while maintaining a minimum contact whetting current to avoid nuisance alarm conditions.

A key feature of the design is a high visibility flag indicator that can only be reset under healthy supervision conditions. An optional green Healthy LED may also be specified. Failure of the circuit or supply being supervised will cause the main relay element to drop out, the flag to fall and the alarm contacts to change state.

The following Alpha XR versions are available:

- Trip relay supervision
- DC supply supervision
- Trip circuit supervision

A wide voltage operating range and time delays ensures reliable operation. The XR range is packaged in a draw out case system and can be either flush panel or rack mounted.

FRONT PANEL

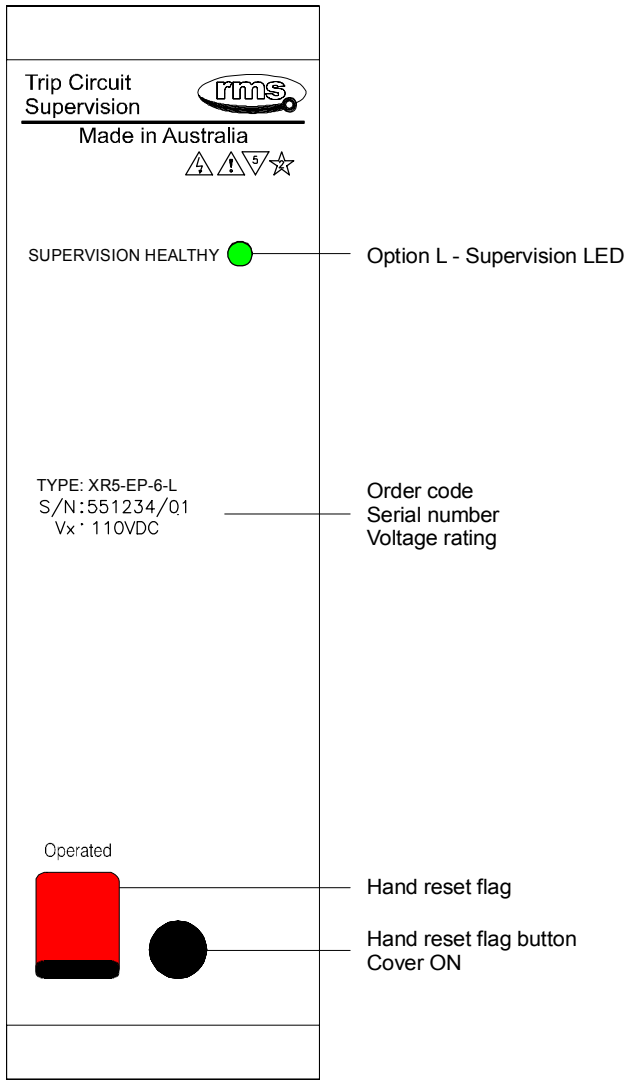


Figure 1: Alpha XR5-00-6
 Front panel layout depicting flags, resets and option positions

MODEL DESIGNATION

Alpha XR models:

XR5-00-1 Trip relay coil supervision

Alternative contact arrangements from 5M+0B to 1M+4B can be specified in the ordering information section. Contact terminal assignments are defined in table 1.

XR5-00-4 Trip supply supervision

Alternative contact arrangements from 5M+0B to 1M+4B can be specified in the ordering information section. Contact terminal assignments are defined in table 1.

XR5-00-6 Single pole trip circuit supervision

Alternative contact arrangements from 5M+0B to 1M+4B can be specified in the ordering information section. Contact terminal assignments are defined in table 1.

ALPHA XR SUPERVISION RELAY SPECIFICATIONS

Refer to the following sections in this publication:

- Front Panel Layout
- Trip Relay Supervision
- DC Supply Supervision
- Trip Circuit Supervision
- General Specifications
- Ratings and Standards
- Case Details
- Terminal Wiring
- Ordering codes

DESCRIPTION

The XR5-00-1 relay is designed to supervise trip relay circuits utilizing high burden trip relays such as the Alpha TR, 2HS or 6RJ Series available from RMS.

The operating element of the XR5-00-1 comprises a single Alpha five contact heavy-duty attracted armature control relay with a single operating coil and delay slug. It has two dropping resistors R1 and R2 of equal ohmic value, connected in series with the coil.

If the circuit being supervised becomes open circuited or if the supply fails, the relay will become deenergized and an alarm is given - visual indication and 5 contacts change state.

Under healthy conditions supervision current flows through the voltage monitor Vm-a and the relay coil (AR5) is energized. If the circuit being supervised becomes open circuit or if the supply fails, the relay will become de-energized and an alarm is given (5 alarm contacts and flag indication).

To prevent the alarm being given when the circuit being supervised is operated, supervision current flows through the voltage monitor Vm-b to energize the relay coil (AR5). For this purpose, an additional normally open contact is required from the latching tripping relay as depicted in figures 2 to 4. A short time delay of >100ms, is incorporated to hold up the alarm relay during a normal trip relay operation.

Trip Relay Supervision

NORMAL OPERATING CONDITIONS

Trip Relay De-Energized

Figure 2 shows a typical trip circuit with the XR5-00-1 employed to supervise the trip relay coil and the auxiliary supply. The blue lines depict the supervised circuits and red arrows depict the path of the supervision current with the auxiliary supply applied to the circuit with the trip relay de-energized.

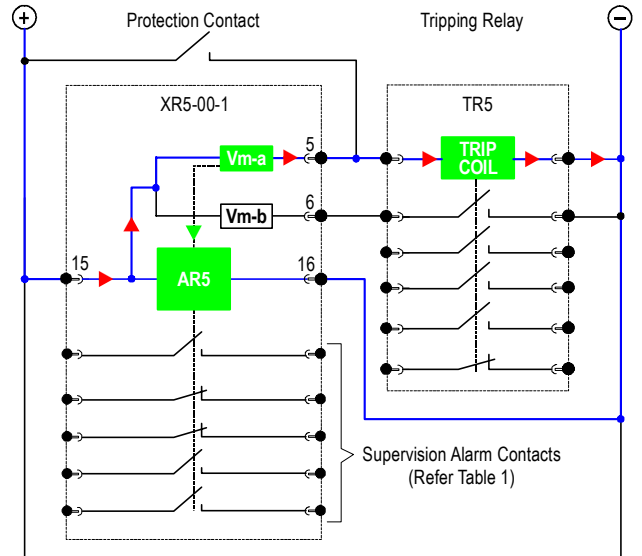


Figure 2: Alpha XR5-00-1 - Normal system condition

Circuit Breaker Open – Tripped Condition

Figure 3 shows the path of the supervision current with the auxiliary supply applied and the trip relay operated. In this state the CB will be open and the trip relay coil is not monitored. The XR5-00-1 relay remains energized through a N/O contact on the trip relay indicating a healthy auxiliary supply.

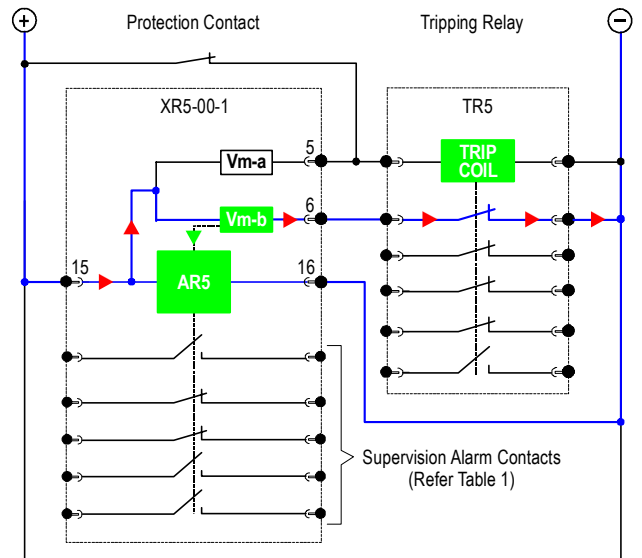


Figure 3: Alpha XR5-00-1 - Tripped condition

FLAG OPERATION

Each relay element is supplied with a flag (target) indicator. The indicator consists of a high visibility solid dayglow orange mechanical flag.

The flag can only be reset when a healthy auxiliary supply is present in the supervision circuit.

Operation: Drops on coil de-energisation.
Reset: Hand reset.

TRIP RELAY COIL RESISTANCE & SUPERVISION CURRENT

The XR5-00-1 circuit design is optimized to minimize the supervision current in the tripping relay coil to avoid the possibility of nuisance tripping. Resistance of the tripping relay coil must be less than the maximum tabulated below to ensure adequate supervision current flows through the XR5-00-1.

Nominal supply (V)	Maximum tripping relay coil resistance (ohms)	Approximate voltage monitor Vm-a equivalent resistance (ohms)	Supervision current* (mA)
32	640	5300	3.4 to 8.0
48	960	9600	3.0 to 6.4
110	2200	22K	2.9 to 6.3
125	2500	28K	2.7 to 5.8
220	4400	57K	2.4 to 4.8
240	4800	61K	2.5 to 4.9
250	5000	66K	2.4 to 4.7

* Actual supervision current is dependent on the tripping relay coil resistance.

TRIP SUPPLY BURDEN

Allow a nominal 3 Watts for the alarm relay AR5 which is normally energized under healthy trip circuit conditions.

THERMAL RATING

All operate & reset circuits are designed to withstand continuous application of 120% of nominal voltage

OPERATING VOLTAGE RANGE

Minimum pick up voltage: 70% of nominal
Maximum rated voltage: 120% of nominal continuous

DROP OUT VOLTAGE 50-60% of nominal

The highest voltage level at which the relay will drop out and signal an alarm is 60% of nominal.

The lowest voltage level at which the relay will remain picked up is 50% of nominal. Below 50% of nominal an alarm signal condition is guaranteed.

RESET (DROP OUT) TIME

Not less than 100ms when supply is switched from 100% to 50% of the nominal rated operating voltage.

PICK UP TIME

<70ms

CONTACTS

Standard: 2M+3B
Other contact arrangements: Refer table 1
Drop out delay: >100ms

Trip Relay Supervision

ABNORMAL OPERATING CONDITION

Circuit Breaker Tripping Disabled – Alarm Condition

Figure 4 shows the XR5-00-1 supervision relay dropped out due to the loss of circuit continuity. Loss of the supervision current due to a loss of the auxiliary supply or a break in any section of the red circuit for >100ms will cause this condition.

An alarm is reported through the change in state of the five (5) alarm contacts and the front panel hand reset flag indicator.

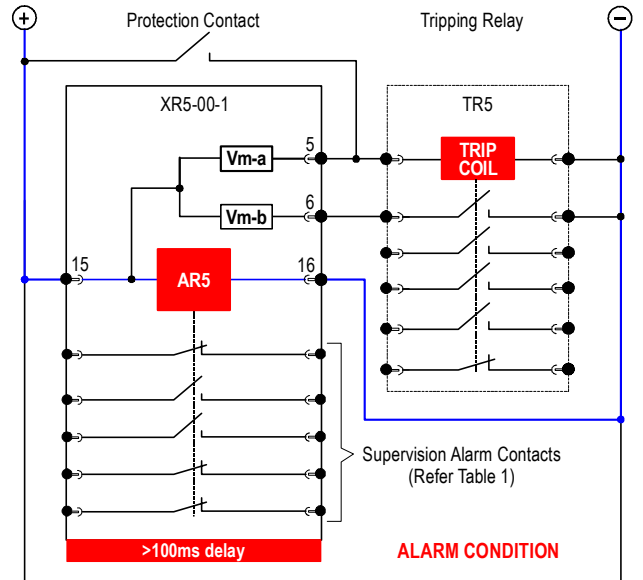


Figure 4: Alpha XR5-00-1 - Abnormal condition

DESCRIPTION

The XR5-00-4 is designed to supervise DC auxiliary supplied employed on high security protection and tripping circuits employed in high voltage power systems. The XR5-00-4 comprises a single Alpha 5 heavy-duty attracted armature control relay with a single operating coil and delay slug.

Under healthy conditions, the coil is energized and if the supply fails, the relay will drop out to initiate a supply fail alarm. A short time delay is incorporated to avoid nuisance tripping due to switching transients.

CIRCUIT RESISTANCE AND BURDEN

The XR5-00-4 circuit design is optimized to minimize the supervision current to minimize the burden on the supervised DC supply. Allow a nominal 2.5 Watts for the supervision circuit and 3 Watts for the alarm relay AR5 which is normally energized under healthy trip circuit conditions.

THERMAL RATING

All circuits are designed to withstand continuous application of 120% of nominal voltage.

FLAG OPERATION

Each relay element is supplied with a flag (target) indicator. The indicator consists of a high visibility solid dayglow orange mechanical flag.

The flag can only be reset when a healthy auxiliary supply is present in the supervision circuit.

Operation: Drops on coil de-energisation.
Reset: Hand reset.

OPERATING VOLTAGE RANGE

Minimum pick up voltage: 70% of nominal
Maximum rated voltage: 120% of nominal continuous

DROP OUT VOLTAGE 50-60% of nominal

The highest voltage level at which the relay will drop out and signal an alarm is 60% of nominal.

The lowest voltage level at which the relay will remain picked up is 50% of nominal. Below 50% of nominal an alarm signal condition is guaranteed.

RESET (DROP OUT) TIME

Greater than 100ms when supply is switched from 100% to 50% of the nominal rated operating voltage.

PICK UP TIME

<70ms

NOMINAL OPERATING VOLTAGES

24, 32, 48, 110, 220, 240 and 250V DC available.

CONTACTS

Standard: 2M+3B
Other contact arrangements: Refer table 1
Drop out delay: >100ms

DC Supply Supervision

NORMAL OPERATING CONDITIONS

Auxiliary Supply Available

Figure 5 shows a typical DC auxiliary supply circuit with the XR5-00-4 employed to supervise the auxiliary supply. The blue lines depict the supervised circuits and red arrows depict the path of the supervision current with a healthy auxiliary supply applied.

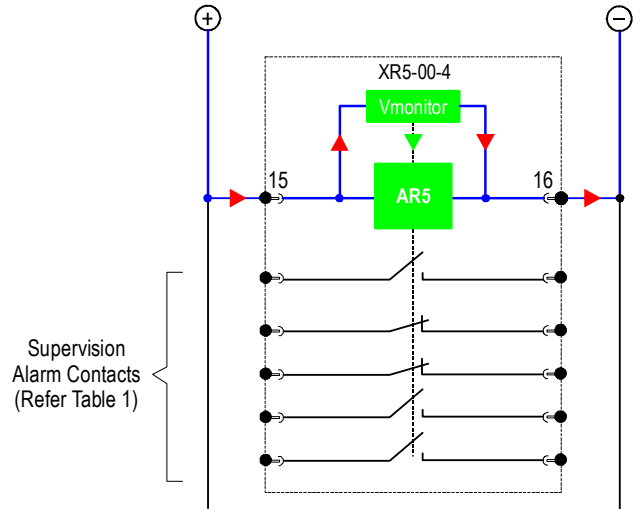


Figure 5: Alpha XR5-00-4 - Normal system condition

ABNORMAL OPERATING CONDITION

Auxiliary Supply Fail – Alarm Condition

Figure 6 shows the XR5-00-4 supervision relay dropped out due to the loss of auxiliary supply. Loss of the supervision current due to a loss of the auxiliary supply or a break in any section of the red circuit for >100ms will cause this condition.

An alarm is reported through the change in state of the five (5) alarm contacts and the front panel hand reset flag indicator.

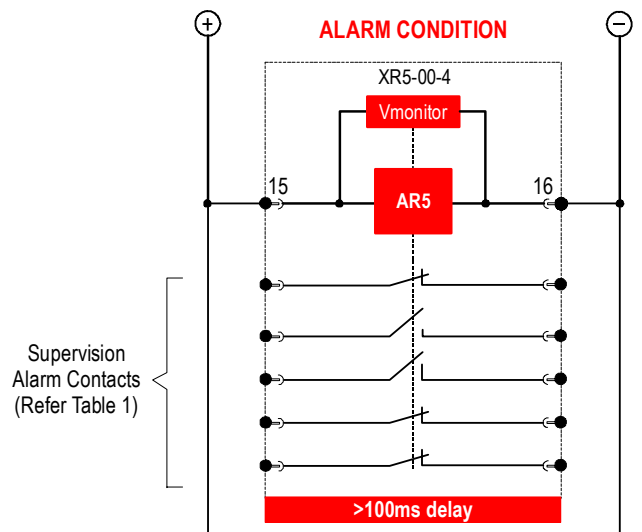


Figure 6: Alpha XR5-00-4 - Abnormal condition – Loss of supply

DESCRIPTION

The operating element of the XR5-00-6 comprises two supervision elements A and B, which combine to hold in a heavy duty Alpha 5 contact attracted armature relay.

Supervision is active with the circuit breaker in the open or closed position via the "a and b" CB auxiliary contacts.

Supervision also remains active during tripping operations and irrespective of the status of the tripping relay contact

Figures 7 to 12 depict how the supervision element A and B monitor circuit continuity under all conditions:

Figure 7	CB open	Trip contact open	Auxiliary supply available
Figure 8	CB closing	Trip contact open	
Figure 9	CB closed	Trip contact open	
Figure 10	CB opening	Trip contact closed	
Figure 11	CB open	Trip contact closed	
Figure 12	Alarm condition		

An important characteristic of the design is the low level of current required to flow through the CB coil for correct operation of the supervision scheme. A constant low supervision current is maintained irrespective of the circuit breaker open or closed position. This results in low power dissipation in the XR5-00-6 circuit and the circuit breaker coil which reduces the possibility of nuisance tripping.

Trip Circuit Supervision

SUPERVISION WITH CIRCUIT DE-ENERGIZED

Circuit Breaker Open and Trip Contact Open

Figure 7 shows a typical tripping circuit with the XR5-00-6 employed to supervise the circuit continuity, the circuit breaker coil and the auxiliary supply.

The blue lines depict the supervised circuits and red arrows the path of the supervision current through supervision element A with the auxiliary supply applied and the circuit breaker closed.

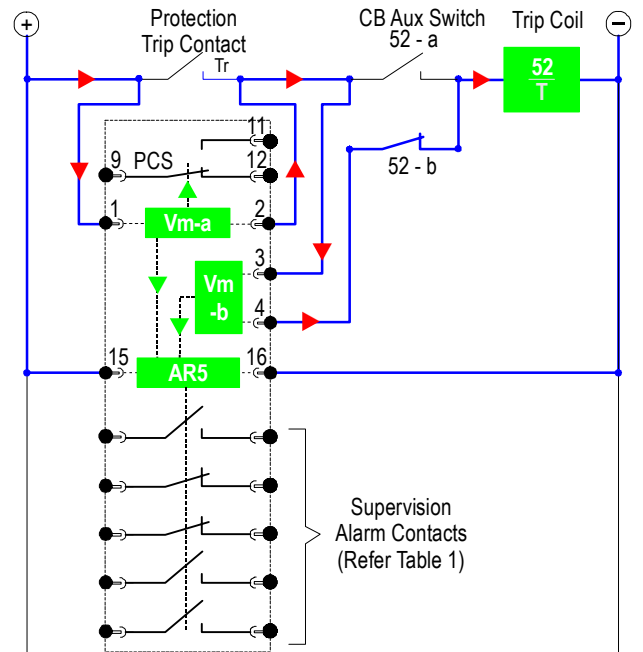


Figure 7: Alpha XR5-00-6 – CB open

SUPERVISION DURING CIRCUIT BREAKER CLOSURE

Circuit Breaker Closing and Trip Contact Open

Closure of the circuit breaker could cause the supervision circuits to be interrupted for the duration of the circuit breaker operate time. During this interval a 400 ms time delay holds in the AR5 alarm relay contacts.

Figure 8 shows the loss of supervision current through both the A and B supervision elements for the duration of the circuit breaker operating period.

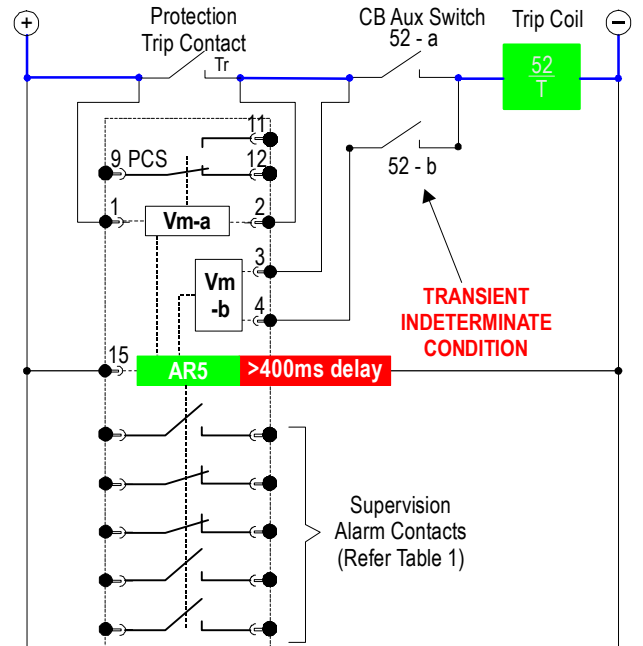


Figure 8: Alpha XR5-00-6 - CB closing

CIRCUIT BREAKER PRE-CLOSING SUPERVISION CONTACT

The Protection Trip Contact (Tr) should be in the open (Reset) condition prior to closing the CB. The PCS contact shown in figures 7 to 12 provides an output for the Tr status:

The PCS contact will remain CLOSED when Tr is OPEN
The PCS contact will remain OPEN when Tr is CLOSED

This logic allows the PCS contact to be employed as an interlock on the CB reclose circuit to avoid an attempt to close the CB while a trip signal is present.

PRE-CLOSING SUPERVISION FUNCTION BURDEN

Allow a nominal 2 Watts for the pre-closing switch function which is normally energized when the Protection Trip Contact (Tr) is open.

Trip Circuit Supervision

SUPERVISION WITH CIRCUIT ENERGIZED

Circuit Breaker Closed and Trip Contact Open

Figure 9 shows a typical tripping circuit with the XR5-00-6 employed to supervise the circuit continuity, the circuit breaker coil and the auxiliary supply.

The blue lines depict the supervised circuits and red arrows the path of the supervision current through supervision element A with the auxiliary supply applied and the circuit breaker closed.

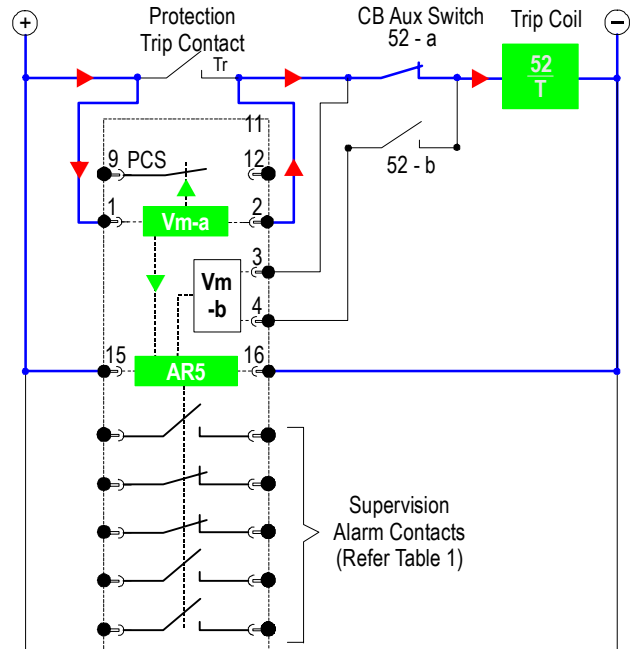


Figure 9: Alpha XR5-00-6 – CB closed

SUPERVISION DURING CIRCUIT BREAKER OPERATION

Circuit Breaker Opening and Trip Contact Closed

Operation of the protection relay trip contact will cause the supervision circuits to be interrupted for the duration of the circuit breaker operate time. During this interval a 400ms time delay holds in the AR5 alarm relay contacts.

Figure 10 shows the loss of supervision current through both the A and B supervision elements for the duration of the circuit breaker operating period.

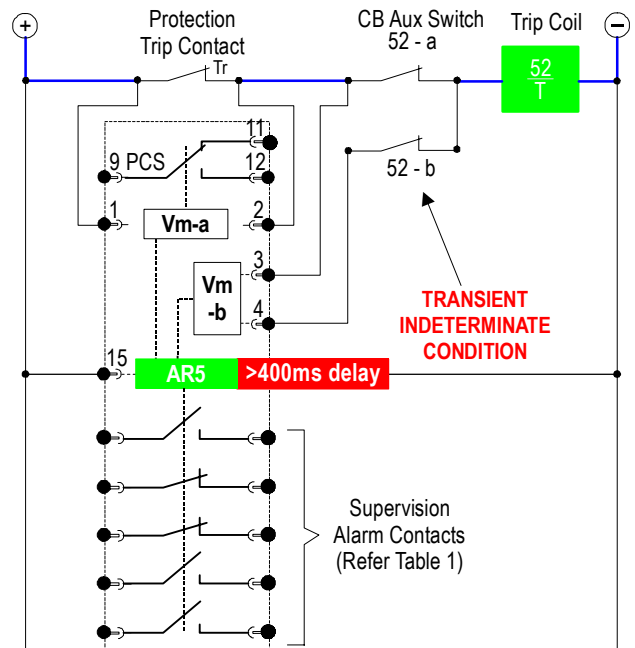


Figure 10: Alpha XR5-00-6 - CB opening

TRIP SUPPLY BURDEN

* Actual operating burden is dependent on the CB coil resistance.

TRIP CIRCUIT RESISTANCE & SUPERVISION CURRENT

The XR5-00-6 circuit design is optimized to minimize the supervision current in the CB trip coil to avoid the possibility of nuisance tripping. Combined resistance of the circuit breaker and CB trip coil must be less than the maximum tabulated below to ensure adequate supervision current flows through the XR5-00-6.

Nominal supply (V)	Maximum tripping relay coil resistance (ohms)	Approximate voltage monitor equivalent resistance* (ohms)	Supervision current** (mA)
32	640	5300	3.4 to 8.0
48	960	9600	3.0 to 6.4
110	2200	22000	2.9 to 6.3
125	2500	28000	2.7 to 5.8
220	4400	57000	2.4 to 4.8
240	4800	61000	2.5 to 4.9
250	5000	66000	2.4 to 4.7

* The XR5-00-6 has been designed so that only one of either Vm-a or Vm-b is in circuit at any time.

** Actual supervision current is dependent on the combined circuit breaker and CB trip coil resistance.

ALARM CIRCUIT BURDEN

Allow a nominal 3 Watts for the alarm relay AR5 which is normally energized under healthy trip circuit conditions.

FLAG OPERATION

Each relay element is supplied with a flag (target) indicator. The indicator consists of a high visibility solid dayglow orange mechanical flag.

The flag can only be reset under healthy supervision conditions.

Operation: Drops on coil de-energization.
Reset: Hand reset.

TRIPPING RELAYS

Self reset or latching type lockout type tripping relays may be employed with the TRX-00-6 trip circuit supervision scheme.

OPERATING VOLTAGE RANGE

Minimum pick up voltage: 70% of nominal
Maximum rated voltage: 120% of nominal continuous

DROP OUT VOLTAGE

50-60% of nominal
The highest voltage level at which the relay will drop out and signal an alarm is 60% of nominal.

The lowest voltage level at which the relay will remain picked up is 50% of nominal. Below 50% of nominal an alarm signal condition is guaranteed.

RESET (DROP OUT) TIME

Not less than 400ms when supply is switched from 100% to 50% of the nominal rated operating voltage.

PICK UP TIME

<70ms

NOMINAL OPERATING VOLTAGES

32, 48, 110, 125, 220, 240 and 250V DC available.

CONTACTS

Standard: 1M+4B
Other contact arrangements: Refer table 1
Drop out delay: >400ms

Trip Circuit Supervision

SUPERVISION WITH CIRCUIT TRIPPED

Circuit Breaker Open and Trip Contact Closed

Figure 11 shows the path of the supervision current with the auxiliary supply applied and the circuit breaker in the open condition. The blue lines depict the supervised circuits and red arrows the path of the supervision current through supervision element B. Note that the supervision element A is shorted out by the closed trip relay contact. Supervision will also function with the trip relay contact reset (Open), as shown in figure 7.

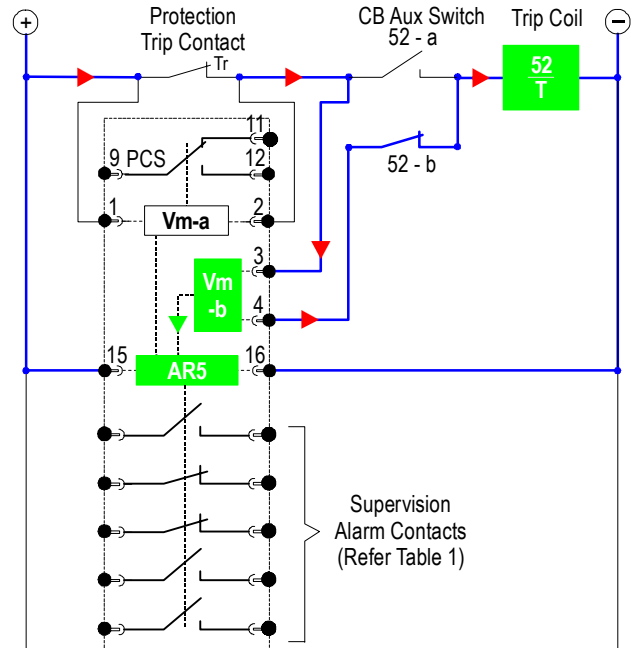


Figure 11: Alpha XR5-00-6 – CB open

ABNORMAL CONDITIONS

- Trip circuit fail
- Trip supply fail
- CB trip coil fail

Under abnormal trip circuit conditions, supervision elements A and B will be unable to detect supervision current. After a time delay of >400ms the AR5 alarm relay will drop out and the hand reset flag activated.

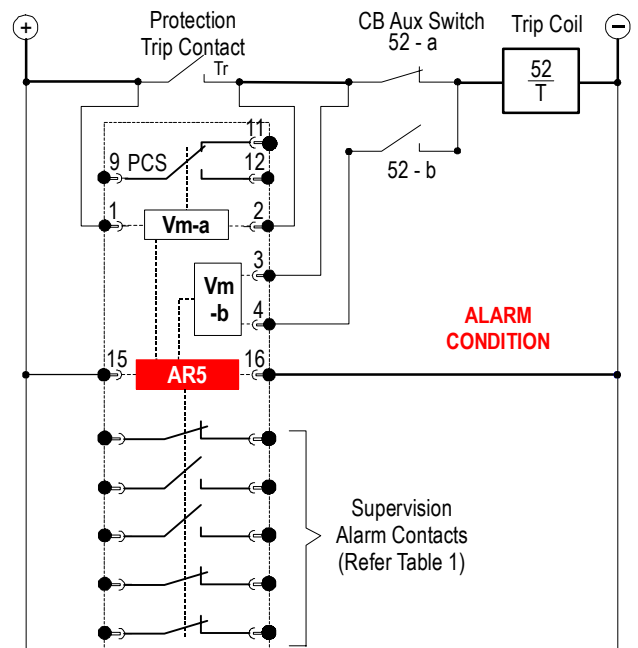


Figure 12: Alpha XR5-00-6 – Alarm condition

Flag Indicators

The Alpha XR relays are fitted with reverse acting flags.

The flag can only be reset under healthy supervision conditions.

Note: There is no impact on the contact operate speed or relay performance when these flags are fitted.

HAND RESET FLAG

This flag is independent of the self reset flag and operates when the contacts are first operated and remains visible until it is manually hand reset using the reset button located on the front of the relay. Note that this flag can only be reset once the relay has been reset.

COIL OPERATION LED

An optional front panel LED may be specified to indicate when a voltage is applied to the operate coil terminals. This feature can be useful during commissioning particularly for latching relays and where armature flags are not fitted to indicate the operate voltage status. Refer ordering code section.

Contact Performance

SELF CLEANING CONTACTS

Contacts are constructed from silver / copper alloy, specially shaped and positioned to ensure very reliable, low resistance operation. Over travel of the contacts during each operation causes a wiping action ensuring a clean 'make' with minimal bounce.

DOUBLE MAKE / DOUBLE BREAK CONTACTS

Each contact is made up of a double make or double break geometry to increase the isolation between open contacts and increase the current break rating.

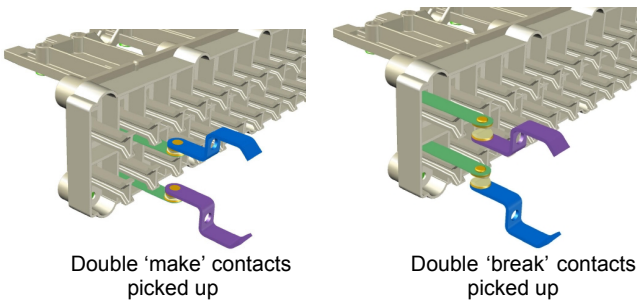


Figure 13: Contact geometry

This geometry also removes the need for internal wiring between case terminals and the relay contacts. This results in four (4) less electrical terminations per contact providing increased system security.

GOLD PLATED CONTACTS

Gold plated contacts are available as an option for very low current switching. Refer ordering code section.

Self Reset Contact Operation

The Alpha XR relay contacts can be specified to reset in a number of ways:

All contacts operate when a voltage in the specified range is applied to the relay coil and reset when this voltage is removed.

Contact Tests

ALARM CONTACT RATINGS

Make and Carry Continuously

1,250 VA AC resistive Limited at both 660 V and 8 A
1,250 W DC resistive Limited at both 660 V and 8 A

Make and Carry for 3 Seconds

7,500 VA AC resistive Limited at both 660 V and 30 A
7,500 W DC resistive Limited at both 660 V and 30 A

AC Break Capacity

1,250 VA AC resistive Limited at both 8 A and 250 V

DC Break Capacity

100W DC resistive
50W DC inductive (L/R 40 ms) Limited at both 8 A and 250 V

Contact Operational Life

Maximum contact load: >10,000 operations

CB PRE-CLOSING SUPERVISION CONTACT RATINGS

Carry Continuously

5 A AC or DC

Make & Carry

L/R ≤ 40ms & V ≤ 300 V 0.5s 20 A AC or DC

AC resistive 1,250 VA
AC inductive 250 VA @ pf ≤ 0.4
DC resistive 75W
DC inductive 30W @ L/R ≤ 40ms
50W @ L/R ≤ 10ms

Maximum contact load:

>10,000 operations

Minimum recommended load:

0.5W limit 10mA / 5V

Mechanical Tests

VIBRATION (SINUSOIDAL)

IEC60255-21-1 CLASS I

0.5 gn vibration response	No mal operation
1.0 gn vibration endurance	

SHOCK AND BUMP

IEC60255-21-2 CLASS I

5 gn shock response, 11 ms	No mal operation
15 gn shock withstand, 11 ms	
10 gn bump test, 16 ms	

SEISMIC

IEC60255-21-3 CLASS I

1 gn seismic response	No mal operation
-----------------------	------------------

MECHANICAL CLASSIFICATION

IEC60255-1

Durability at full load 0.1 Hz maximum repetition rate	>10,000 operations
Durability at no load 0.1 Hz maximum repetition rate	>100,000 operations

Ratings and Standards

Electrical Tests

TRANSIENT OVERVOLTAGE

IEC60255-5 CLASS III

Between all terminals and earth	5 kV 1.2/50 us 0.5 J
Between independent circuits	5 kV 1.2/50 us 0.5 J

INSULATION COORDINATION

IEC60255-5 CLASS III

Between all terminals and earth	2 kV rms for 1 minute
Between independent circuits	2 kV rms for 1 minute
Across normally open contacts	1 kV rms for 1 minute

HIGH FREQUENCY DISTURBANCE

IEC60255-22-1 CLASS III

Between all terminals of the same circuit	1.0 kV peak
Between independent circuits	2.5 kV peak
Between independent circuits and earth	2.5 kV peak

FAST TRANSIENT

IEC60255-22-4 CLASS IV

Applied directly to operate inputs	4kV peak 100 kHz
Applied directly to all inputs	4kV peak 100 kHz

ELECTROSTATIC DISCHARGE

IEC60255-22-2 CLASS III

6kV contact discharge	≤ 5% variation
-----------------------	----------------

RADIO FREQUENCY INTERFERENCE

IEC60255-22-3

10V/m, 80 TO 2,700MHz	≤ 5% variation
-----------------------	----------------

CONDUCTED RFI

IEC60255-22-6

10V, 0.15 to 80MHz	≤ 5% variation
--------------------	----------------

Climate Tests

TEMPERATURE RANGE

IEC60068-2-1/2

Operating:	-10 to +55 °C
Storage:	-25 to +75 °C

HUMIDITY

IEC60068-2-78

40 °C and 93% RH non condensing

M SERIES DRAW OUT CASE

The M Series case range has been specifically designed to meet the demanding and varied requirements for applications in power utility sub-station environments. The standard 4U high 19 inch rack mounting modular configuration simplifies panel design and installation.

Mounting points and overall panel dimensions meet international standards such that the cases may be interchanged with other similar types available on the market.

The following standard features are provided:

- Compact size 2M28-S case
- Rack and flush mounting
- Draw out relay module
- Rear M4 screw terminals

Refer to the M Series Technical Bulletin for additional information on case mounting and wiring.

CASE CONSTRUCTION

The outer case is manufactured from zinc coated mild steel providing considerable strength and long term durability. The entire case surface is powder coated to provide corrosion protection and an attractive textured finish. Relay elements are mounted on fabricated fiberglass and acetal components to provide reliable electrical isolation and simple cost effective construction.

TERMINAL RATINGS

20A continuous
200A 1 s

Case Details

TERMINAL BLOCK

The draw out function is made possible through the use of inner and outer terminal blocks, each with silver plated contact fingers to provide high current rating and very low electrical resistance.

A high quality molded inner terminal block is utilized which incorporates the switching contacts thus eliminating the requirement for internal wiring and in turn removing a potential circuit failure mechanism.

M4 screw terminals allow 2x crimp lug connections per point. Space efficient design allows 28 contact points per terminal block.

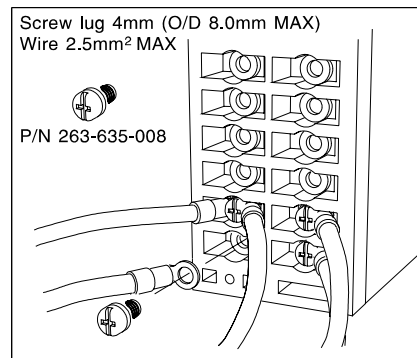


Figure 14: Rear terminal wiring configuration

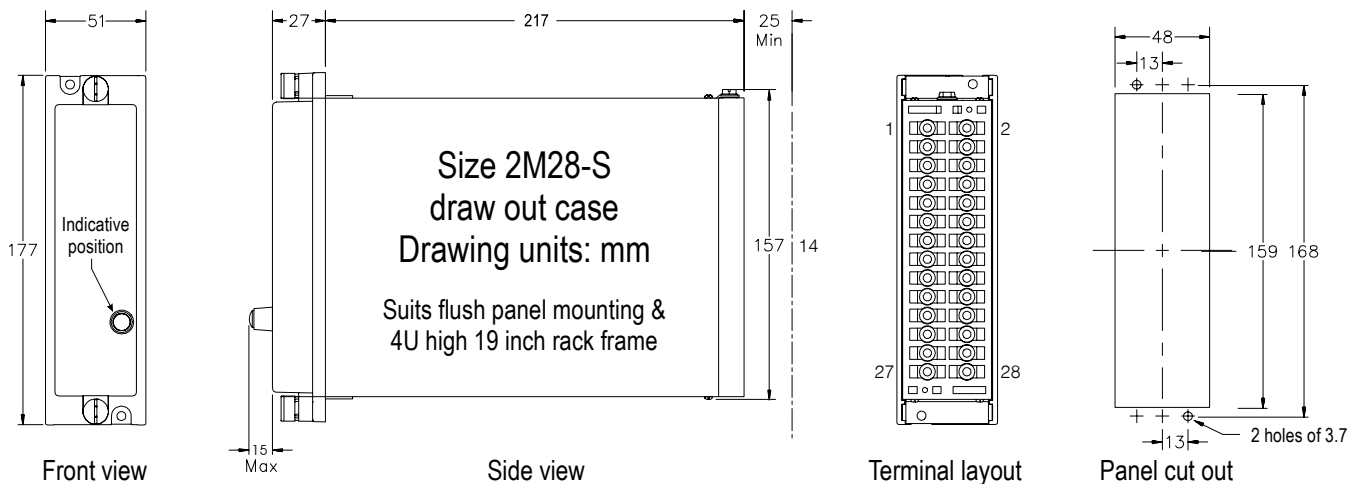


Figure 15: Alpha case details

XR5 Terminal Wiring

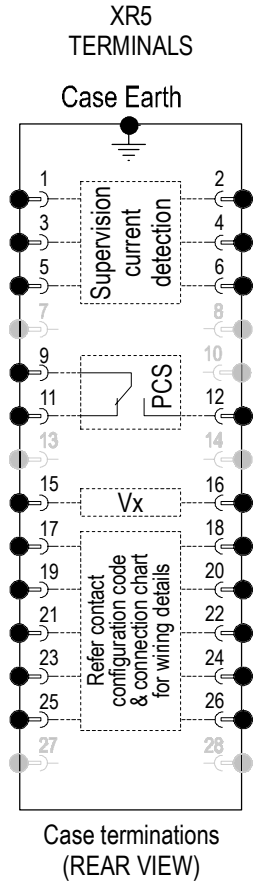


Figure 16: Generic rear terminal layout for the XR5
Refer wiring diagrams in figures 2-12

STANDARD WIRING CONFIGURATION

The case termination diagram in figure 15 depicts the rear screw terminals and position of the five (5) output contacts.

The contact function between each pairs of terminals is determined by the order code selected.

- M** Normally open Make (M) contact
This contact closes when the relay operate coil is energized.
- B** Normally closed Break (B) contact
This contact opens when the relay operate coil is energized.

Table 1 provides the terminal wiring assignment for each of the contact configurations available with the XR5 relay version.

Refer to the application diagrams in figures 2 to 12 for other circuit connections to the case terminals.

This wiring table is also printed on the side panel of the draw out module for easy reference in the field.

Contact Configuration	XR5 Case Terminal Number Pairs				
	17-18	19-20	21-22	23-24	25-26
N 5M+0B	M	M	M	M	M
P 4M+1B	M	M	M	M	B
Q 3M+2B	B	M	M	M	B
R 2M+3B	B	M	M	B	B
S 1M+4B	B	B	M	B	B

Table 1: Contact configuration and connection chart for the XR5

CIRCUIT BREAKER PRE-CLOSING SUPERVISION CONTACT

The XR5-00-6 Trip Circuit Supervision version has an additional C/O make (M), PCS contact across terminals 9, 11 and 12.

Australian Content

Unless otherwise stated the product(s) quoted are manufactured by RMS at our production facility in Melbourne Australia. Approximately 60% of our sales volume is derived from equipment manufactured in house with a local content close to 80%. Imported components such as semi-conductors are sourced from local suppliers & preference is given for reasonable stock holding to support our build requirements.

Quality Assurance

RMS holds NCSI (NATA Certification Services International), registration number 6869 for the certification of a quality assurance system to AS/NZS ISO9001-2008. Quality plans for all products involve 100% inspection and testing carried out before despatch. Further details on specific test plans, quality policy & procedures may be found in section A4 of the RMS product catalogue.

Product Packaging

Protection relays are supplied in secure individual packing cardboard boxes with moulded styrene inserts suitable for recycling. Each product & packing box is labeled with the product part number, customer name & order details.

Design References

The products & components produced by RMS are based on many years of field experience since Relays Pty Ltd was formed in 1955. A large population of equipment is in service throughout Australia, New Zealand, South Africa, The Middle East & South East Asia attesting to this fact. Specific product & customer reference sites may be provided on application.

Product Warranty

All utility grade protection & auxiliary relay products, unless otherwise stated, are warranted for a period of 24 months from shipment for materials & labour on a return to factory basis. Repair of products damaged through poor application or circumstances outside the product ratings will be carried out at the customer's expense.

Standard Conditions of Sale

Unless otherwise agreed RMS Standard Terms & Conditions (QF 907) shall apply to all sales. These are available on request or from our web site.



Relay Monitoring Systems Pty Ltd

6 Anzed Court, Mulgrave, Victoria 3170, AUSTRALIA

Tel: +61 3 8544 1200 Fax: +61 3 8544 1201 Email: rms@rmspl.com.au Web: www.rmspl.com.au