



उत्पाद मैनुअल
लघु -वोल्टेज स्विचगियर और कंट्रोल गियर भाग 5 नियंत्रण सर्किट उपकरण और स्विचिंग तत्व
अनुभाग 1 इलेक्ट्रोमैकेनिकल नियंत्रण सर्किट उपकरण
IS/IEC 60947-5-1: 2024 के अनुसार

PRODUCT MANUAL

Low-Voltage Switchgear and Control Gear Part 5 Control circuit devices and switching elements
Section 1 Electromechanical control circuit devices
according to IS/IEC 60947-5-1: 2024

यह उत्पाद नियमावली सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसधारियों द्वारा विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना-X के अंतर्गत प्रमाणन के संचालन में एकरूपता और पारदर्शिता सुनिश्चित करने के लिए संदर्भ सामग्री के रूप में उपयोग की जाएगी। बीआईएस प्रमाणन प्राप्त करने के इच्छुक भावी आवेदक भी इस दस्तावेज़ का उपयोग कर सकते हैं।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity of practice and transparency in operation of certification under Scheme-X of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक संख्या / IS No.	:	IS/IEC 60947-5-1: 2024
	शीर्षक / Title	:	Low-Voltage Switchgear and Control Gear Part 5 Control circuit devices and switching elements Section 1 Electromechanical control circuit devices
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूनाकरण दिशानिर्देश / Sampling Guidelines		
a)	लाइसेंस देने / लाइसेंस के दायरे में बदलाव के लिए अतिरिक्त दिशानिर्देश Additional Guidelines for GoL / CSoL	:	Please refer ANNEX – A
3.	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer ANNEX – B
4.	तकनीकी फाइल Technical File	:	Please refer ANNEX – C
5.	लेबलिंग और चिह्नांकन की आवश्यकताएँ Labelling and Marking Requirements	:	Please refer ANNEX – D

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6. लाइसेंस का दायरा / Scope of the Licence:	
Licence is granted to use Standard Mark as per IS/IEC 60947-5-1: 2024 with the following scope:	
Name of the product:	Electromechanical Control Circuit Devices
Type: (Cl. 5.2)	Kind of control circuit device (cl.5.2.1) - manual control switches (<i>eg. push-buttons, rotary switches, foot switches, etc</i>) - electromagnetically operated control switches (<i>eg. time delayed or instantaneous</i>) - pilot switches (<i>eg. pressure switches, temperature sensitive switches (thermostats, programmers, etc.)</i>); - position switches - reed contact magnetic switches - associated control equipment (<i>eg. indicator lights, etc</i>) Kind of switching elements (cl.5.2.2) - auxiliary contacts of a switching device (<i>(e.g. contactor, circuit breaker, etc.) which are not dedicated exclusively for use with the coil of that device</i>) - interlocking contacts of enclosure doors; - control circuit contacts of rotary switches; - control circuit contacts of overload relays
Number of poles: (Cl. 5.2.3)	
Kind of current (Cl. 5.2.4)	- ac - dc
Interrupting medium (Cl. 5.2.5)	- air - oil - gas - vacuum - any other (to be declared)
Method of operation (Cl. 5.2.6.1)	- manual - electromagnetic - motor-operated - pneumatic - electro-pneumatic - electronic - any other (to be declared)
Method of control (Cl. 5.2.6.2)	- automatic - non-automatic - semi-automatic.
Rated voltages (Cl. 5.3.2)	- Rated operational voltage (U_e) - Rated insulation voltage (U_i) - Rated impulse withstand voltage (U_{imp})
Rated Current (Cl. 5.3.3)	- Rated operational currents (I_e) - Conventional free air thermal current (I_{th}) - Conventional enclosed thermal current (I_{the})
Rated Frequency	- 50 Hz - 50/60 Hz
Utilization Categories (Table 1)	- AC 12 - AC 13 - AC 14 - AC 15 - DC 12 - DC 13 - DC 14
Electrically separated contact elements (Cl.5.10)	- Electrically separated - Not electrically separated
Pollution Degree (cl.7.1.3.2)	
Degree of Protection	- To be declared
Class of Control circuit device	Class I/ Class II
Additional Features *	

Electromagnetic Compatibility (EMC) (Cl. 9.4)	- Tested for Environment A / Tested for Environment B / Not tested
Control devices with integrally connected cables (Annex – G)	- With / without
Control circuit devices with semiconductor switching elements (Annex – H)	- With / without
Control Circuits with indicator lights and indicating towers (Annex – J)	- With / without
Control Circuits with Direct Opening Action (Annex – K)	- Suitable / Not Suitable

** The additional features shall be mentioned in the scope of licence document as per the declaration submitted by the manufacturer.*

ANNEX - A
Additional Guidelines for GoL / CSoL

1. To ensure uniform operation of certification process, the following guidelines in addition to CMD Guidelines on GoL / CSoL as per the conformity assessment Scheme – X of Schedule – II of the BIS (Conformity Assessment) Regulations, 2018 placed below shall be followed:

For GoL:

- i. The scope of the licence shall be restricted to the applicable test (with / without EMC test as per Cl. 9.4 (or) Special test as per Cl. 9.1.5, etc) that were carried out on the representative samples of the Electromechanical Control Circuit Devices as per the grouping guidelines given at Annex - B. However, it shall be ensured that all the requirements of the standard and all applicable tests as declared by the manufacturer have been reported in the test report.
for eg(s):
 - a) *In case the Electromechanical Control Circuit Devices are not tested for the requirements of Cl. 9.4 i.e. Electromagnetic compatibility (EMC), the scope granted to the manufacturer shall clearly mention – ‘Not tested for EMC requirement’.*
 - b) *In case if special tests are carried out based on the declaration of the manufacturer, the same has to be incorporated in the applicable models.*
- ii. The licence document shall contain the following technical data for each of the model as enclosed at Annex – AA.

For CSoL:

The manufacturer shall submit the technical file for the model(s) for which the manufacturer intends to get the CSoL as specified in Annex C, covering all aspects, including compliance report of product having complete test report issued by third party laboratory(ies). The manufacturer shall also submit a declaration whether the product category applied for inclusion falls under the same group for which the manufacturer is already having licence or the product category is a new group as per the grouping guidelines (Annex – B). The technical file and documents submitted by the manufacturer shall be reviewed by the BOs and the following process has to be followed:

- a) If the model / variety applied for CSoL falls under the existing group and does not require any additional manufacturing and testing infrastructure, CSoL may be done based on desk audit for which the manufacturer has applied for CSoL.
- b) If the model / variety applied for CSoL falls under different group, visit shall be carried out to verify the manufacturing process and necessary processes required for manufacturing such products. After satisfactory verification of manufacturing process and necessary processes required for manufacturing, CSoL may be processed.

For e.g.: In case the manufacturer is having a licence for - manual control switches (e.g. push-buttons, rotary switches, foot switches, etc.) and applies for inclusion of - electromagnetically operated control switches (time delay and instantaneous) and / or Pilot switches (e.g. pressure switches, temperature sensitive switches (thermostats, programmers, etc.), an inspection visit shall be carried out at the manufacturer premise to verify the manufacturing process and necessary processes required for manufacturing such products.

ANNEX – B **Grouping Guidelines**

1. For considering Grant of licence / Change in scope of licence the manufacturer shall submit the technical file including the test reports(s) / certificates(s) etc. for each of the variety of particular type designation(s) or model(s) as specified in the Scope of Licence (as given in Sl. 6 above) based on product grouping as per Gazette Notification F. No. 8(1)/2018-HEI-Part (1) dated 10 March 2025 given below:

2. Product Grouping

2.1 Product Series - A group of Electromechanical control circuit devices or switching elements intended for controlling, signalling, interlocking, etc., of switchgear and controlgear. as defined in 5.2.1 and 5.2.2 of IS/IEC 60947-5-1: 2024; referred to a particular type designation with a unique combination of feature(s) under classification mentioned in Table A at Annexure -I.

3. Sampling and Testing

3.1 Sampling and testing - The type test for each product series shall be as below:

3.1.1 For each product series, the type test report for control circuit device or switching elements with maximum features and configurations satisfying all the operational performance criteria shall be tested. The tests and sample(s) must be in accordance with the clause 9.3.1 of IS/IEC 60947-5-1: 2024.

3.1.2 Type tests are grouped together in a number of test sequences, the test shall be done as per sequence and applicability defined in clause 9.1.2 and 9.3.1 of IS/IEC 60947-5-1:2024.

Note- Spares, accessories and sub-assemblies are integral part of product series. They shall be tested as far as possible with the equipment. (Spares and sub-assemblies being the integral part of the device, separate testing is not envisaged; Accessories may please be used while testing.

In case, the accessories are complying to the requirement of any other standard (IS/IEC 60947 series) then accessories shall meet the requirements of the respective Indian Standards.

3.1.3 Each product rating(s) /varieties may not be subjected to testing. Product sample as mentioned in para 3.1.1 will cover all the Product rating (s) / varieties having ratings equal or below under the Scope of Licence is by virtue of this grouping guidelines.

3.1.4 In order to reduce multiple testing for the same type of control circuit devices or switching elements, following simplified test procedure shall be used:

- a) **Test sequence I** (as per cl.9.3.1 of IS/IEC 60947-5-1: 2024): In case of control circuit device having provision of multiple configurations of switching elements having similar construction, then sample with maximum possible numbers of switching elements shall be tested.
- b) For **other Test sequence(s)** (as per cl.9.3.1 IS/IEC 60947-5-1: 2024): For Making & Breaking Capacities Tests and Short Circuit tests: Tests shall be carried out on a single-pole element or on one pole of a multi-pole device provided that all pole elements are identical in construction and operation.
- c) In case of control circuit devices or switching elements marked claiming more than one utilization category then higher utilization under the most severe conditions shall be tested. **Control switching elements marked with both AC & DC utilization category shall be tested separately for AC as well as DC supply.**
- d) Tests performed at 50 Hz are deemed to cover 60 Hz applications and vice versa.
- e) In case of multiple rated operational voltages (U_e) & rated operational currents (I_e) for a single utilization category; Making & breaking capacities tests will be conducted on the rating with highest VA ($U_e \times I_e$).
- f) Tests performed with different terminal designs. Where control circuit device or switching elements is designed to be provided with different designs of terminal, additional test(s) shall be done as per Test sequence I (IS/IEC 60947-5-1: 2024) along with Measurement of clearances and creepage distances (cl.8.1.4 of IS/IEC 60947-5-1: 2024), if applicable
- g) For indicator lights and indicating towers, type tests conducted on samples with highest rated power will cover all the other rating(s) / varieties having lower or equal rated power.

3.1.5 However, for cases as mentioned in Table B, Annexure-II, all type tests are not required to be conducted; if applicable only selected type tests will be conducted for inclusion of the same under scope of licence.

Annexure-I

Table A. Classification of Electromechanical Control Circuit Device

Sl. No.	Classification based on	Type of physical and operational parameter
<i>Classification as per Clause 4 & 5 of IS/IEC 60947-5-1:2024</i>		
1.a)	Kind of control circuit device	a) manual control switches (e.g. <i>push-buttons, rotary switches, foot switches, etc.</i>) b) electromagnetically operated control switches (e.g. <i>time delayed or instantaneous</i>) c) pilot switches (e.g. <i>pressure switches, temperature sensitive switches (thermostats, programmers, etc.)</i>); d) position switches e) reed contact magnetic switches f) associated control equipment (e.g. <i>indicator lights, etc.</i>)
and/ or		
1.b)	Kind of switching elements	- auxiliary contacts of a switching device ((e.g. <i>contactor, circuit breaker, etc.</i>) which are not dedicated exclusively for use with the coil of that device) - interlocking contacts of enclosure doors; - control circuit contacts of rotary switches; - control circuit contacts of overload relays
2.	Type of Contact element	- Form A – Single gap make-contact element; - Form B – Single gap break-contact element; - Form C – Single gap make-break three terminal change-over contact element; - Form X – Double gap make-contact element; - Form Y – Double gap break-contact element; - Form Z – Double gap make-break four terminal change-over contact element - Other if not mentioned above.
3.	Interrupting medium	a) air b) oil c) gas d) vacuum etc.
4.	Method of operation	a) manual, b) electromagnetic, c) motor-operated, d) pneumatic, e) electro-pneumatic etc.
5.	Method of control	a) automatic, b) non-automatic, c) semi-automatic
6.	Degree of protection provided (IP Code)	According to Annex C of IS/IEC 60947-1
<i>Operational Characteristic:</i>		
7.	No. of poles	1P, 2P, 3P, 4P etc.
8.	Kind of current	- ac, - dc - ac & dc
9.	Utilization category	AC-12, AC-13, AC-14, AC-15, DC-12, Dc-13, DC-14

For Example-

Product Series 1- Manual control switches - Push Buttons – XXXX (Type designation), Form X & Form Y, Air-Break type, Manual Operated, Non-automatic controlled, IP54, Utilization Categories: AC-12, AC-15, DC-12, DC-13.

Product Series 2- Electromagnetically operated control switches - Contactor Relays – XXXX (Type designation), Form Zb, Air-Break type, Electromagnetic Operated, Non-automatic controlled, IP20, Utilization Categories: AC-12, AC-15, DC-12, DC-13.

Annexure-II

Table B. Relaxation in Type testing

Following Electromechanical Control Circuit Devices can be added under the scope of Licence without additional complete type testing:

Case	Control Circuit Devices	Condition
A	Equipment not suitable for isolation	If product series is tested for equipment suitable for isolation
B	Same type of control switch with different type of actuator, but same design of contact element	If control circuit device is tested with one type of actuator, other type of actuators will be covered subject to declaration of same fundamental design by manufacturer; with additional tests of “Test Sequence V and /or VI of IS/IEC 60947-5-1: 2024; whichever is applicable. Example of actuator type : rotary, push, pull, top pressed, side pressed, roller etc.

ANNEX – C **Technical File**

1. TECHNICAL FILE - Manufacturer shall maintain a Technical File for each model(s) manufactured by them as per the latest BIS circular Ref: CMD-I/2:17:1 with subject 'Guidelines for Grant of Licence (GoL) as per the conformity assessment Scheme – X of Schedule – II of BIS (Conformity Assessment) Regulations, 2018'.
2. In addition to the documents indicated in above circular, following documents are also to be submitted in the Technical File:
 - a) Declaration for variety(ies) applied for BIS licence. The declaration shall be in line with scope of licence specified in this Product Manual;
 - b) Technical data for model(s) to be tested as per format specified in Annex C.1 (for guidance only);
 - c) Test Report / Certificate of Compliance for Constructional and Performance requirements (Cl. 8 of IS/IEC 60947-5-1: 2024, wherever applicable);
 - d) Declaration with respect to special test and its compliance as per Cl. 9.1.5 of the IS/IEC 60947-5-1: 2024.
3. The technical File shall be maintained by the manufacturer till the End of Life of the variety(ies).

Annex C.1

Format for Technical Data

Name of the product: Electromechanical Control Circuit Devices

Equipment Type:

Technical Description of the product:

Test item particulars:	
Rated Voltages	
- rated operational Voltage: U_e (V) :	
- rated insulation voltage: U_i (V) :	
- rated impulse withstand voltage: U_{imp} (kV) :	
- rated control circuit voltage, kind of current and frequency:	
- rated control circuit voltage, kind of current and frequency:	
- control circuit supply voltage, kind of current and frequency, if different from those of the control coil;	
Rated Currents	
- rated operational current: I_e (A) :	
- conventional free air thermal current: I_{th} (A) :	
- conventional enclosed thermal current: I_{the} (A) :	
- Type of Supply (ac/dc)	
- Rated Frequency (Hz):	
- Short-circuit protection device:	
- Utilization Category	
- Method of operation:	
- Method of control:	
- Suitability for Isolation:	
- Interrupting Medium	
- Degree of protection:	
- Pollution degree/ Material Group:	

- Number of Poles:	
- Number of positions of mains contact:	
- No. of break per pole:	
- Material of terminal:	
- Breaking arrangement for fused devices:	
- Control circuit	
- Auxiliary circuit	
- Kind of protective device:	
For non-universal screwless terminals (if applicable)	
- "s" or "sol" for terminals declared for solid conductors:	
- "r" for terminals declared for solid and stranded conductors:	
- "f" for terminals declared for flexible conductors:	

ANNEX – D
Labelling and Marking Requirements

1. **Labelling and Marking Requirements-** Labelling and Marking of Control Circuit Device shall be as per Cl. 6.2 of IS/IEC 60947-5-1: 2024.
 - a) Each Electromechanical Control Circuit Device and its packaging shall be marked with the Standard Mark, as specified in Scheme –X in Schedule –II of the BIS (Conformity Assessment) Regulations, 2018. The Standard Mark shall carry the licence number in a visible manner and shall be as specified in the licence document.
 - b) In addition, details of BIS website shall be marked on the package as follows: 'For details of BIS certification please visit www.bis.gov.in.'
2. In case the Electromechanical Control Circuit Devices are not tested for the requirements of Cl. 9.4 i.e. Electromagnetic compatibility (EMC), the product / its packaging shall either be marked with the following on the Electromechanical Control Circuit Devices – 'Not tested for EMC requirement'.
3. Electromechanical Control Circuit Devices shall be clearly marked with the rated current up to which the product has been tested:

