F. No. 8(1)/2021-HEI
Government of India
Ministry of Heavy Industries
HEI Division

Udyog Bhawan, New Delhi
Dated: 18th July , 2024

Circular

Subject: Seeking comments/inputs on Draft Grouping Guidelines for products under Electrical Equipment (Quality Control) Order-Reg.

The undersigned is directed to place the draft of the following product grouping guidelines covered under the EEQCO on the website of the Ministry of Heavy Industries (https://heavyindustries.gov.in/) for public comments, if any:

1. Switches disconnect or, switch disconnect or and fuse - combination unit IS/IEC 60947: Part 3 :2020
2. Electromechanical contactor and motor –Starter IS/IEC 60947: Part 4: Sec1: 2018
3. Electromechanical control circuit devices IS/IEC 60947: Part 5: Sec1: 2016
4. Electrical emergencies stop devices with mechanical latching function IS/IEC 60947: Part 5: Sec5: 2016

2. The comments may be sent through email to divhei-dhi@gov.in by 2nd August 2024 to this Ministry.

Encl.: As mentioned above.

(Swaminathan N.)
Under Secretary to Govt. of India

[To be published in the Gazette of India, Extraordinary, Part I, Section 1]
Ministry of Heavy Industries
Government of India
Order

New Delhi, the

S.O.(E)- Product Specific Guidelines for Low Voltage Switchgear and Controlgear: Switches, Disconnectors, Switch-Disconnectors and Fuse-Combination Units conforming to IS/IEC 60947-3: 2020 under Electrical Equipment (Quality Control) Order, and subsequent amendments made from time to time

1. This Product Specific Guidelines /sampling shall be used for the purpose of grant of licence /change in scope of licence for Low Voltage Switchgear and Controlgear: Switches, Disconnectors, Switch-Disconnectors and Fuse-Combination Units conforming to IS/IEC 60947-3 : 2020 under Electrical Equipment (Quality Control) Order, 2020 and subsequent amendments made from time to time and as per the procedure defined by Bureau of India Standards, accordingly.

2. For purpose of obtaining the licence / change in scope of licence from the Bureau, Manufacturer shall apply to Bureau of Indian Standards ascertaining the scope of licence and technical file including test reports(s) / certificates(s), etc. as per the procedure defined by the Bureau of Indian Standards under the Conformity Assessment Scheme as mentioned in the Electrical Equipment (Quality Control) Order, 2020 and subsequent amendments made from time to time ensuring the minimum number of sample(s) in respect of a product series/range or group.

3. Product Grouping

   3.1 **Product series of equipment(s):** A group of switches, disconnectors, switch-disconnectors and/or fuse combination units referred to a particular type designation(s) or model(s) having a range of current ratings with a unique combination of function(s) under classification mentioned in Table A at Annexure -I.

Note 1: Switches, disconnectors, switch-disconnectors and fuse-combination units is referred to as "equipment".

Note 2: Equipment in a product series may have same or different fundamental design and function(s).

Note 3: Within the product series, the width or height may vary according to number of poles or types of termination.

Note 4: The classification is indicative, and possible classification may increase on the basis of any specific requirements.

3.2 Requirements for equipment having the same fundamental design (as per clause 9.3.3.3 of IS/IEC 60947-3 : 2020)

Switches, disconnectors, switch-disconnectors or fuse combination units shall meet the following criteria for acceptance as the same fundamental design:

a) the material, finish and dimensions of the current-carrying parts are identical, except for variation in design of terminals and means of fuse attachment
b) the contact size, material, configuration and method of attachment are identical;
c) the operating mechanism is of the same fundamental design, materials and physical characteristics are identical;
d) the closing and opening speeds of contacts are substantially the same;
e) moulding and insulating materials are identical;
f) method, materials and construction of any arc extinction device are identical.

The following variations are also permitted, 9.3.3.4 of IS/IEC 60947-3 : 2020 or provisions in 4.1.3 is used:

g) utilization category and operational voltage;
h) application for 50 Hz or 60 Hz;
i) three or four pole equipment (switched or non-switched neutral), provided the requirements of clause 8.1.9 of IS/IEC 60947-3:2020 are applicable;

j) design of terminal provided that clearances and creepage distance are not reduced (see clause 9.2.5 and 9.3.4.3 of IS/IEC 60947-3:2020 and also see clause 8.1.4 of IS/IEC 60947-1:2020);

k) different types of actuators, either additional or integral, provided the requirements for strength of actuator are verified (see clause 9.2.6 *of IS/IEC 60947-3: 2020*) on each type of actuator, one of which during
test sequence I.

l) fuse-base contacts of switch-fuses, disconnector-fuses and switch-disconnector-fuse with different types of fuse-links (fuse-link removed only under no-load conditions).

4. Sampling and Testing

4.1 Sampling and Testing: The type test for each product series shall be as below:

4.1.1 For each product series type test report, an equipment with maximum current rating and maximum features, functions satisfying all operational criteria shall be tested. The test must be in accordance with the clause 9.3.2, Table 9 & Table 10 of IS/IEC 60947-3 : 2020. The number of test sample (s) for each test sequence shall be selected as defined in the respective test sequence and according to 4.1.3 if applicable.

4.1.2 Type Tests are grouped together in number of test sequences, the test shall be done as per the sequence and applicability defined in each test sequence. For each sequence, tests shall be made in the order listed in accordance with the requirements of the appropriate subclause, unless otherwise specified in IS/IEC 60947-3 : 2020.

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.

4.1.3 In order to reduce multiple testing for the same fundamental design of equipment, the following Simplified test procedure shall be used:

a) If equipment having the same fundamental design is marked claiming more than one utilization category and/or more than one operational voltage, the number of test samples may be reduced, providing the tests are conducted under the most severe conditions.

For short-circuit, making and breaking, and operational performance tests, the conditions are deemed more severe if the following conditions are simultaneously fulfilled:
− operational rated voltage equal or higher;
− test current equal or higher;
− power factor equal or lower;
− number of operations equal or higher.
Product series having multiple rated operational voltages, multiple rated operational currents, multiple utilization categories will be covered by testing a single sample at maximum rated operational current with corresponding rated operational voltage and maximum rated operational voltage with corresponding rated operational current, most severe utilization category with maximum number of operations as per Table 4 of IS/IEC 60947-3.

b) Tests performed at 50 Hz are deemed to cover 60 Hz applications and vice versa.

with the following exceptions:
- temperature-rise test according to 9.3.4.2 for devices having a current greater than 800 A;
NOTE By agreement between manufacturer and user, tests at 50 Hz may be accepted for operation at 60 Hz and vice versa for currents greater than 800 A.
temperature-rise and operational performance of relays and releases (see 8.2.2 and 8.2.2.7 of IS/IEC 60947-:2020).
Temperature-rise tests of coils shall be performed for each frequency, but only one included in the relevant test sequence, and if separate supplying of coils and other circuits is possible, it is accepted that other circuits remain supplied at 50 Hz.

c) Tests performed on three pole devices are deemed to cover also four pole devices with a non-switched neutral pole, provided a single-phase test on the neutral pole is performed according to clause 9.3.3.3.4 of IS/IEC 60947-1:2020

Tests performed on four switched pole devices are deemed to cover also three switched pole devices provided that all poles are identical and the closing and opening speeds of contacts are substantially the same (only the requirements of clause 8.1.9 of IS/IEC 60947-3 : 2020 are applicable concerning closing and opening of the neutral pole). However, the four switched pole devices shall always be connected in a three-phase arrangement (see Figure 11 of IS/IEC 60947-1:2020).

d) Tests performed with different types of fuse-base contacts. Where switch-fuse, disconnector-fuse or switch-disconnector-fuse are designed to be provided with different types of fuse-base contacts, temperature-rise tests according to 9.3.4.2 of IS/IEC 60947-3 : 2020 shall be conducted on each type at the corresponding highest fuse rated current.

The type having the maximum temperature-rise among those of the maximum test current shall be used for tests to sequences I, II and

V

Sequence IV shall be conducted on each type of fuse-base contacts whose fuse connecting means are other than bolted connection, at the highest rated conditional short circuit corresponding current, and, if different, with the type of fuse having the maximum let through energy at the highest test voltage.

e) Tests performed with different terminal designs. Where equipment is designed to be provided with different designs of terminal, the requirements and tests according to 9.3.4.2 of IS/IEC 60947-3:2020 and 9.2.5 of IS/IEC 60947-1:2020 shall be conducted on each design.

Where equipment has terminals to be used on plug-on busbars, tests according to **9.3.4.2, 9.3.6.2 or 9.3.7.3.1 a) or 9.3.7.2.1 a)** of IS/IEC 60947-3:2020, as applicable, shall be performed. Verification of the plugging operation shall be made. The number of operating cycles shall be 50, the cycle being from the connected position to the disconnected position and back to the connected position. The plugging operation test can be performed on a separate sample.

The test is considered to be satisfactory if the equipment remains mechanically operable.

f) When conducting the tests according to 4.1.3 items d) and e), the temperature-rise at terminals and accessible parts can be measured. If the temperature-rise limits of accessible parts comply with Table 3 of IS/IEC 60947-1:2020, no further tests of these parts according to clause 9.3.4.7 of IS/IEC 60947-3:2020 are necessary. Since the intention of the tests to 4.1.3, items d) and e), is to establish the worst case, the values of Table 2 of IS/IEC 60947-1:2020 do not apply.

4.1.4 Each Product rating(s) / varieties are not subjected to testing. Product samples as mentioned in para 4.1.1 will cover all the

product rating(s) / varieties having ratings lower or equal under the scope of Licence is by virtue of this grouping guidelines.

4.1.5 For any change in the fundamental design (i.e. non-permissible variations corresponding to same fundamental design), the manufacturer shall have additional sample submission for testing as defined and may have a common test report for a given type of equipment with different fundamental design.

4.1.6 However, for cases as mentioned in Table B, Annexure-II, separate type test report is not required for inclusion of the same under scope of licence.

4.1.7 If Equipment with a fuse combination, having same fundamental design and function is tested with most severe conditions, only additional test sequence as applicable is needed on the equipment without fuse to include under the scope of licence. No repeat testing of all test sequences is required on the equipment without fuse as outlined in Table C, Annexure III.

4.1.8 Equipment marked with both AC & DC voltage ratings shall be tested separately for both the utilization (AC & DC) categories.

Annexure -I

Table A. Classification of Equipment Switches, Disconnectors, Switch-Disconnectors and Fuse-Combination Units

Sr. No.	Classification based on	***Type of Equipment***	
1	***Equipment Types***	Switch; Switch-fuse; Fuse-switch; Disconnector; Disconnector-fuse; Fuse-disconnector; Switch-disconnector; Switch-disconnector-fuse; Fuse-switch-disconnector	
2	***Breaking arrangement for fused devices***	***- Single opening*** ***- Double opening***	
	Classification as per Clause 4 of IS/IEC 60947-3 : 2020		
3	Utilization category	Category A	Category B
		AC-20A	AC-20B
		AC-21A	AC-21B
		AC-22A	AC-22B
		AC-23A	AC-23B
		AC-23Ae	AC-23Be
		DC-20A	DC-20B
		DC-21A	DC-21B
		DC-22A	DC-22B
		DC-23A	DC-23B
4	Method of operation of manually operated equipment	- dependent manual operation; - independent manual operation; - semi-independent manual operation	
5	Suitability for isolation	- suitable for isolation; - not suitable for isolation	
6	Degree of protection provided	According to clause 8.1.12 and Annex C of IS/IEC 60947-1:2020	
	Operational Characteristics		
7	Type of Supply	- 1 Phase AC; - 3 Phase AC; - Direct Current (DC)	
8	Number of poles	- One Pole; - Two Pole; - Three Pole; - Four Pole, Three Pole + Neutral	
9	Number of positions of the main contacts	-Two(default) - If more than two	

For Example

Product series 1: Switch –***AXXA (type designation)*** - AC-21A/ AC-22A/ AC-23A - independent manual operation - suitable for isolation – IPXX

Product series 2: Switch Disconnector, Switch Disconnector Fuse –***XXXXX (type designations)*** - AC-21A/ AC-22A/ AC-23A - independent manual operation - suitable for isolation – IPXX

Product series 3: **Switch-disconnector** – **AYYA (type designation)** - AC-21A-independent manual operation –suitable for isolation – IPXX

Annexure -II

Table B. Switches, Disconnectors, Switch-Disconnectors and Fuse-Combination Units can be added under the scope of Licence without additional type testing

Case		**Condition**
A	Equipment with multiple utilization categories and/or multiple operational voltages, operational currents	If the Equipment with same fundamental design is tested with most severe test conditions in terms of equal or higher operational rated voltage, equal or higher test current, equal or lower power factor, equal or higher number of operations; all other utilization categories, operational voltages, variants are deemed to be covered. e.g. AC-23 will cover both AC-21 and AC-22 categories; higher operational voltage will cover all lower voltages. **e.g. DC-23 will cover DC-22 & DC-21** Test to be carried out at maximum rated operational current at corresponding rated operational voltage and at maximum rated operational voltage with corresponding rated operational current, most severe utilization category with maximum number of operations as per **Table 4 & 5 of IS/IEC 60947-3: 2020**
B	Equipment not suitable for isolation	If Equipment with same fundamental design is tested for equipment suitable for isolation then non-suitable for isolation will cover.
C	One, Two, Three, Four Poles type equipment	If the Equipment with higher pole combination is tested, then lower pole combination will be deemed to be covered subject to identical pole designs with same voltage rating. **If Four Pole is tested then 3 P + Neutral, 3 Pole, 2 Pole will be covered.** **Single Pole shall be tested separately.**
D	Equipment with different types of accessories, relays and releases	If the Equipment is tested with a representative release, relays, accessories of highest features or parameters, it will cover other variants, however declaration shall be provided for all such types by Manufacturer.
E	Equipment with combination of functions	If a range of Equipment having the same design and has combination of functions, equipment tested for maximum functionality and maximum severity will deem to cover all other type of equipment e.g.

		a) Switch-disconnector will cover Switch and Disconnector b) Switch Disconnector fuse will cover Switch-Fuse and Disconnector-fuse c) Fuse switch disconnector will cover Fuse-switch and Fuse – disconnector

Annexure -III

Table C. Equipment without Fuse can be added under the scope of Licence with applicable additional type testing.

Functions	Equipment Type	Fundamental design	Remark
Making, breaking and isolating	Switch-disconnector-fuse	Same	All applicable test sequences
	Switch-disconnector	Same	Can be added under the scope of licence with only additional type test as per Table 9 and 14 of IS/IEC 60947-3:2020
	Fuse-switch-disconnector	Different	All applicable test sequences
Isolating	Disconnector-fuse	Same	All applicable test sequences
	Disconnector	Same	Can be added under the scope of licence with only additional type test as per Table 9 and 14 of IS/IEC 60947-3:2020
	Fuse-disconnector	Different	All applicable test sequences
Making and breaking current	Switch-fuse	Same	All applicable test sequences
	Switch	Same	Can be added under the scope of licence with only additional type test as per Table 9 of IS/IEC 60947-3:2020
	Fuse-switch	Different	All applicable test sequences

Note: If for a function type, only one equipment is available then that equipment will be subjected for all applicable test sequences.

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S.O. (E):- Product Specific Guidelines for Low Voltage Switchgear and Controlgear: Electromechanical Contactor(s) and Motor Starter(s) conforming to IS/IEC 60947-4-1:2018 under Electrical Equipment (Quality Control) Order and subsequent amendments made from time to time.

1. This Product Specific Guidelines/sampling shall be used for the purpose of grant of licence/change in scope of licence for Low Voltage Switchgear and Controlgear: Electromechanical Contactors and Motor Starters conforming to IS/IEC 60947-4-1:2018 under Electrical Equipment (Quality Control) Order, 2020 and subsequent amendments made from time to time and as per the procedure defined by Bureau of Indian Standards, accordingly.

2. For purpose of obtaining the licence/change in scope of licence from the Bureau, Manufacturer shall apply to Bureau of Indian Standards ascertaining the scope of licence and technical file including test report(s) /certificate(s), etc. as per the procedure defined by the Bureau of Indian Standards under the Conformity Assessment Scheme as mentioned in the Electrical Equipment (Quality Control) Order, 2020 and subsequent amendments made from time to time ensuring the minimum number of sample(s) in respect of a product series/ range or group.

3. Product Grouping

3.1 Product Series of Electromechanical Contactor(s) and Motor Starter(s) - A group of Contactor(s) and/or Motor Starter(s) having a common frame size or enclosure [1] used for a range of current ratings with a unique combination of feature(s) under classification mention in Table A at Annexure-I.

4. Sampling and Testing

4.1 sampling and testing - The type test for each product series shall be as below:

[1] **Frame size or Enclosure -** a term designating a group of contactors and/or motor-starters, the external physical dimensions of which are same to a range of current ratings.

4.1.1 For each product series type test report: Contactor(s) and/or Motor Starter(s) equipment with Maximum rated operational current (or rated power), at corresponding rated operational voltage and equipment with maximum rated operational voltage, at corresponding rated operational current (or rated power), with maximum functions satisfying all operational performance criteria shall be tested. The test and number of sample(s) must be in accordance with the clause 9.1.2 and 9.3 of IS/IEC 60947-4-1:2018.

4.1.2 Type tests are grouped together in a number of sequences, the test shall be done as per sequence and applicability defined in clause 9.1.2 and 9.3.1 of IS/IEC 60947-4-1:2018.

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.

4.1.3 Each product rating(s) /varieties may not be subjected to testing. Product sample as mentioned in para 4.1.1 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.

4.1.4 The selection of samples to be tested for a series of devices with same enclosure / frame size and without significant difference in construction shall be based on engineering judgement including but not limited to as defined below:

Case I - Contactor(s) having multiple utilization category – As per Clause 5.4.2 of IS/IEC 60947-4-1:2018.

Case II - Contactor(s) having multiple ratings for same utilization category – rating with max. Operational current (or maximum power), at the corresponding rated operational voltages of the equipment declared to be considered for test purpose.

Case III – For a given range of motor combination starter(s), if any Starter combination is tested with the Main/Line Contactor of a highest rating (rated operational current) with suitable overload relay then all other possible combination(s) with lower complexities of the same Contactor with different relays ratings are covered by this combination.

Example:

Sr. No.	***Starter Enclosure Size***	***Rated Operational Voltage (Starter)***	***Rated Operational Power (Starter) (kW)***	***Rated Operational Current (Starter) (A)***	***Contactor***	***Overload Relay Range***
1		*3ϕ -415V ac*	*0.55*	*1.7*	*Type – X (12A)*	*1 – 1.6 A*
2		*3ϕ -415V ac*	*0.75*	*2.2*	*Type – X (12A)*	*1.6 – 2.5 A*
3		*3ϕ -415V ac*	*1.1*	*2.9*	*Type – X (12A)*	*2.0 – 3.2 A*
4		*3ϕ -415V ac*	*1.5*	*3.8*	*Type – X (12A)*	*3.2 – 5.0 A*
5	*Size 1*	*3ϕ -415V ac*	*2.2*	*5.1*	*Type – X (12A)*	*4.0 – 6.3 A*
6		*3ϕ -415V ac*	*3.7*	*8.1*	*Type – X (12A)*	*6.3 – 10.0 A*
7		***3ϕ -415V ac***	***5.5***	***11.4***	***Type – X (12A)***	***8.0 – 12.5 A***
8		*3ϕ -415V ac*	*7.5*	*15.4*	*Type – Y (20A)*	*12.5 – 20 A*
9		***3ϕ -415V ac***	***9.3***	***19.5***	***Type – Y (20A)***	***16 – 25 A***

All applicable tests will be conducted on 2x ratings sr. no 7 and 9 i.e. 5.5 kW & 9.3 kW.

4.1.5 However, for ease of Product Series formation or in case of same fundamental design spread in more than one phases under phase -wise plan as mentioned Electrical Equipment (Quality Control) Order, 2020 and subsequent amendments made from time to time, higher product rating(s) tested will cover the lower product ratings(s) of other phase of phase -wise plan.

4.1.6 However, for cases as mentioned in Annexure-II separate type test report is not required for inclusion of the same under scope of license.

4.1.7 Contactors/starters having both AC & DC voltage ratings shall be tested separately for both AC & DC utilization categories.

Annexure-I

Table A. Classification of Electromechanical Contactor and Starters combinations (physical and operational parameter)

S. No.	Classification based on	Type of physical and operational parameter
	Classification as per Clause 5.2 of IS/IEC 60947-4-1:2018	
1.	Type of equipment	a) Contactor, b) direct-on-line a.c. starter c) star-delta starter;d) two-step auto-transformer starter; e) rheostatic rotor starter; f) combination or protected starter g) motor protective switching device (MPSD)
2.	No. of poles	a) 1P, b) 2P, c) 3P, d) 4P
3.	Kind of current	a) ac, b) dc
4.	Interrupting medium	a) air, b) oil, c) gas, d) vacuum, etc.
5.	Method of operation	a) manual, b) electromagnetic, c) motor-operated, d) pneumatic, e) electro-pneumatic etc.
6.	Method of control	a) automatic, b) non-automatic, c) semi-automatic
	Operational Characteristic	
7.	Utilization category	a) AC1, AC2, AC3, AC4, AC5a, AC5b, AC6a, AC6b, AC7a, AC7b, AC8a, AC8b etc. b) DC1, DC3, DC5, DC6 etc.
8.	Control circuits	a) type of current – ac, dc or ac/dc; b) rated frequency (for ac) or direct current; c) rated control circuit voltage *Uc* d) rated control circuit supply voltage *Us* where applicable e) power consumption
9.	**Rated duties**	**a) Eight-hour duty (continuous duty)** **b) Uninterrupted duty** **c) Intermittent periodic duty or intermittent duty** **d) Temporary duty**

		e) Periodic duty
	Additional features	
10.	Suitability for isolation	a) Suitable b) Not suitable
9. 111.	Type of coordination with short-circuit protective devices	a) Type 1 b) Type 2
112.	Degree of protection	With maximum Ingress Protection code/rating
113.	Auxiliary circuits (if applicable)	To be specified as per Clause 5.6 of IS/IEC 60947-4-1:2018 number and kind of contacts (to be described, e.g. 2 NO & 2NC contacts)
14.	Types and characteristics of relays and releases (if applicable, only for starters)	To be specified as per clause 5.7.2 Types of relay or release and 5.7.3 Characteristic values of IS/IEC 60947-4-1:2018 For Example: Shunt Trip, Undervoltage Relay, Thermal overload relay or Electronic overload relay etc. with trip class 2 / 3 / 5 / 10 / 10A etc.
15.	Types and characteristics of special starters (if applicable)	To be described, as per clause 5.10, 5.11 or 5.12 of IS/IEC 60947-4-1:2018 as & when applicable

For Example-

Product Series 1*- Four Pole, Air-Break, Contactor, Non-automatic, Electromagnetic Operation, Utilization Categories – AC1, AC2, AC3 & AC4; Uninterrupted duty, Not suitable for isolation, IP20, Rated control circuit voltages : 24V till 440V ac, 50/60Hz, Maximum 4 NO + 4 NC auxiliary contacts, Type 2 Coordination with SCPD; having a common frame size for a range of current.*

Product Series 2*- Three Pole, Air-Break, Direct-On-Line AC Starter, Non-automatic, Electromagnetic Operation, Utilization Categories – AC1, AC2, AC3 & AC4; Uninterrupted duty , Not suitable for isolation, IP43, Rated control circuit voltages : 24V till 440V ac, 50/60Hz, Maximum 2 NO + 2 NC auxiliary contacts, Type 2 Coordination with SCPD; having a common Enclosure size for a range of current.*

Note- the classification is indicative, and the possible classification may be increase on the basis of any specific requirements.

Annexure-II

Table. Contactor and Starter(s) combination(s) can be added under the scope of license without additional type testing. (vice versa condition is not applicable)

Case	Contactor and Starter(s) combination(s)	Condition
A	Product with Multiple Coil types and voltages (ac, dc, electronics, ac/dc etc.)	If product series is tested with representative coil with maximum VA, then all other variants will be covered.
B	Product not-suitable for isolation	if product series is tested for product suitable for isolation.
C	One, two, three and four poles	If the higher Pole Combination device is tested, then lower Pole Combination will be covered subject to identical pole designs. e.g. 4 Pole device testing covered 3 Pole & 2 Pole devices, 1 Pole device will be tested separately.
D	Multiple Short Circuit Breaking capacities (For MPSD)	Highest breaking capacity with corresponding operational voltage and Highest operational voltage with corresponding breaking capacity needs to be tested.
E	Multiple types of Short-Circuit Protective Devices (SCPD) for equipment	SCPD having equal or higher let through energy (I^2t) capacity cover the other SCPDs.
F	Product with different types of releases (Shunt, Under-voltage, under-current, Overload time-delay, Stall relay etc.) having different features/settings	If a product series is tested with a representative release(s), it will cover the other variants. However, declaration to be provided for all such releases by Manufacturer.
G	**Product tested for Type 2 co-ordination**	**Deemed to cover Type 1 co-ordination also.**

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S.O. (E)- Product Specific Guidelines for Low Voltage Switchgear and Controlgear: "Control circuit devices and switching elements – Electromechanical control circuit devices" conforming to IS/IEC 60947-5-1 : 2016 under Electrical Equipment (Quality Control) Order and subsequent amendments made from time to time.

1. This Product Specific Guidelines /sampling shall be used for the purpose of grant of licence /change in scope of licence for Low Voltage Switchgear and Controlgear: "Control circuit devices and switching elements – Electromechanical control circuit devices" conforming to IS/IEC 60947-5-1 : 2016 under Electrical Equipment (Quality Control) Order, 2020 and subsequent amendments made from time to time and as per the procedure defined by Bureau of India Standards, accordingly.

2. For purpose of obtaining the licence / change in scope of licence from the Bureau, Manufacturer shall apply to Bureau of Indian Standards ascertaining the scope of licence and technical file including test reports(s) / certificates(s), etc. as per the procedure defined by the Bureau of Indian Standards under the Conformity Assessment Scheme as mentioned in the under Electrical Equipment (Quality Control) Order and subsequent amendments made from time to time ensuring the minimum number of sample(s) in respect of a product series/range or group.

3. Product Grouping

   3.1 **Product series of equipment(s):** A group of Electromechanical control circuit devices or switching elements intended for controlling, signalling, interlocking, etc., of switchgear and controlgear. as defined in 4.2.1 and 4.2.2 of IS/IEC 60947-5-1: 2016; referred to a particular type designation with a unique combination of feature(s) under classification mentioned in Table A at Annexure -I.

4. Sampling and Testing

4.1 Sampling and Testing: The type test for each product series shall be as below:

4.1.1 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 8.3.1 of IS/IEC 60947-5-1 : 2016.

4.1.2 Type tests are grouped together in number of test sequences, the test shall be done as per the sequence and applicability defined in each test sequence as defined in 8.3.1 of IS/IEC 60947 -5-1 :2016. More than one test sequence or all test sequences may be conducted on one sample at the request of the manufacturer. However, the tests shall be conducted in the sequence given for each sample above.

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.

4.1.3 Each Product rating(s) / varieties may not be subjected to testing. Product samples as mentioned in para 4.1.4 will cover all the product rating(s) / varieties having ratings lower or equal under the scope of Licence is by virtue of this grouping guidelines.

4.1.4 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) For **Test sequence I** (as per **8.3.1 IS/IEC 60947 5-1:2016**): 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. Example: A four pole control circuit device having provisions of configurations – 4NO, 3NO+1NC, 2NO+2NC, 1NO+3NC, 4NC etc.; tested with maximum severity (all switching elements that may be simultaneously closed) shall cover all other configurations.

b) For other **Test sequence(s)** (as per **8.3.1 IS/IEC 60947 5-1:2016**): 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 utilisation 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 (Ue) & rated operational currents (Ie) for a single utilization category; Making & breaking capacities tests will be conducted on the rating with highest VA (Ue x Ie).

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-

1:2016) along with Measurement of clearances and creepage distances(7.1.4 of IS/IEC 60947-5-1: 2016), 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.

4.1.5 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

Sr. No.	***Classification based on***	***Type of Equipment***
	Classification as per Clause 3 & 4 of IS/IEC 60947-5-1: 2016	
1.a)	Kind of control circuit device	- manual control switches, e.g. push-buttons, rotary switches, foot switches - electromagnetically operated control switches, either time delayed or instantaneous, e.g. contactor relays - pilot switches, e.g. pressure switches, temperature sensitive switches (thermostats),programmers, etc - position switches - associated control equipment, e.g. indicator lights, etc.
	And/or	
1. b)	Kind of switching elements	- auxiliary contacts of a switching device (e.g. contactor, circuit breaker, etc.) 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	- air, - oil, - gas, - vacuum etc.
4.	Method of operation	- manual - electromagnetic - pneumatic - electro-pneumatic
5	Method of control	- automatic - non-automatic - semi-automatic
6	Degree of protection provided (IP Code)	According to Annex C of IS/IEC 60947-1
	Operational Characteristics	

7	Number 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 Categorie*s: 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. Electromechanical Control Circuit Devices can be added under the scope of Licence without additional complete type testing.

Case		**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: 2016 ; whichever is applicable.** Example of actuator type : rotary, push, pull, top pressed, side pressed, roller etc.

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S.O.(E)- Product Specific Guidelines for Low Voltage Switchgear and Controlgear: "Control circuit devices and switching elements – Electromechanical control circuit devices with mechanical latching function**" conforming to IS/IEC 60947-5-5 : 2016 under Electrical Equipment (Quality Control) Order, and subsequent amendments made from time to time.**

1. This Product Specific Guidelines /sampling shall be used for the purpose of grant of licence /change in scope of licence for Low Voltage Switchgear and Controlgear: "Control circuit devices and switching elements – Electromechanical control circuit devices with mechanical latching function" conforming to IS/IEC 60947-5-5 : 2016 under Electrical Equipment (Quality Control) Order, 2020 and subsequent amendments made from time to time and as per the procedure defined by Bureau of India Standards, accordingly.

2. For purpose of obtaining the licence / change in scope of licence from the Bureau, Manufacturer shall apply to Bureau of Indian Standards ascertaining the scope of licence and technical file including test reports(s) / certificates(s), etc. as per the procedure defined by the Bureau of Indian Standards under the Conformity Assessment Scheme as mentioned in the Electrical Equipment (Quality Control) Order, 2020 and subsequent amendments made from time to time ensuring the minimum number of sample(s) in respect of a product series/range or group.

3. Product Grouping

   3.1 **Product series of equipment(s):** A group of Electrical Emergency Stop Devices with mechanical latching function, as defined in 3.2 and 3.7 of IS/IEC 60947-5-5: 2016; referred to a particular type designation with a

unique combination of feature(s) under classification mentioned in Table A at Annexure -I.

4. Sampling and Testing

4.1 Sampling and Testing: The type test for each product series shall be as below:

4.1.1 For each product series, type test report an Electrical Emergency Stop Device with mechanical latching function with maximum features and configurations satisfying all operational performance criteria shall be tested. The tests and sample(s) must be in accordance with the clause 7 of IS/IEC 60947-5-5: 2016.

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.

4.1.2 Each Product rating(s) / varieties may not be subjected to testing. Product samples as mentioned in para 4.1.4 will cover all the product rating(s) / varieties having ratings lower or equal under the scope of Licence is by virtue of this grouping guidelines.

4.1.3 Three identical samples of emergency stop device shall be selected, and each sample shall be subjected successfully to the sequence of tests, in the order given in clause 7 of IS/IEC 60947-5-5: 2016.

When more than one type of emergency stop device is manufactured to the same basic design, less than three identical samples may be tested, providing that more than three products of the same family are tested. Such an acceptance shall be fully documented.

4.1.4 Electrical requirements for associated contact elements as per clause 5 of IS/IEC 60947-5-5: 2016, only needs to be tested as per IS/IEC 60947-5-1; and need not to be repeated with Emergency Stop Devices. Testing procedure and sample selection etc. is separately defined in "Product Specific Guidelines for IS/IEC 60947-5-1" along with test mentioned in respective Annex of IS/IEC 60947-5-1.

Annexure -I

Table A. Classification of Electrical Emergency Stop Devices

Sr. No.	***Classification based on***	***Type of Equipment***
	Classification as per Clause 3 of IS/IEC 60947-5-5: 2016	
1.	Kind of electrical control circuit devices and/or switching elements	electrical control circuit devices and/or switching elements with mechanical latching function.
2.	Type of actuator	– button type – trip wire type – rope pull type - bar type - foot pedal type - others,
3.	Method of actuation	– hand operated – foot operated
4.	Method of latching	– push type – pull type
5.	Method of resetting	– push type – pull type – turn type – key type
6.	Mounting hole diameter (only for button)	- D16, - D22 - D30
7.	Degree of protection provided (IP Code)	According to Annex C of IS/IEC 60947-1
	Operational Characteristics	
8.		

For Example

Product series 1: *Electrical Emergency Stop Button – XXXX (Type Designation), Hand Operated, Push actuated, Turn Reset, D22, IP42*

Product series 2: *Electrical Emergency Stop Trip Wire Switch – XXXX (Type Designation), Hand Operated, Pull actuated, Push Reset, IP42.*