

ABB solutions for starting and protecting IE3 motors

Frequently asked questions

ABB is IE3 ready. Are you?

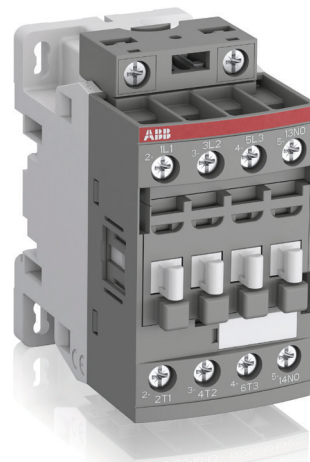
To increase the common knowledge and understanding of IE3 readiness, we have compiled some frequently asked questions here.

What technical changes were done on Manual Motor Starters (MMS) and contactors to fulfil IE3 standards?

Answer

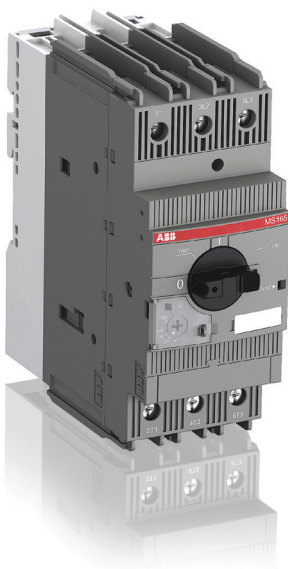
To be able to start premium efficiency motors (IE3-motors) we have increased the magnetic tripping level for some MMS to secure a start without tripping. The implementation became effective in August 2014.

The modern AF contactors from ABB have already from the beginning been designed to handle high efficiency motors. When designing contactors to match the new efficient motors it is a balance between being able to close the contacts having a high inrush current peak and at the same time not causing an increased mechanical tear on the contact system. ABB has been able to solve this using the AF technology, electronically controlled contactors. This technology allow us to fine tune the performance of the magnet system resulting in an optimized function for the job.



The modern AF contactors from ABB have already from the beginning been designed to handle high efficiency motors

We have increased the magnetic tripping level for some MMS to secure a start without tripping



Power and productivity
for a better world™



ABB solutions for starting and protecting IE3 motors

Frequently asked questions

What is the behavior of contactors conducting AC-3 operations in terms of life cycle durability? Where do we find durability graphs?

Answer

For the durability we consider the graphs available in the catalogue can be used also for usage of IE3 motors. When stating the life length of an AC-3 application, it is the breaking of the rated motor current that will have the major influence on the contactor. Since the rated current is lower using an IE3 motor, the life cycle durability will remain close to the same as before.

If you have a need to design a starter for handling an AC-4 application, inching, then we recommend you check the motor parameters.

If the motor data for locked rotor current isn't more than 7,5 times rated current, then you can work directly with the tables in the catalogue. However when you have locked rotor currents higher than this, then please contact ABB for further guidance. Having the motor data in hand we will help you match a suitable contactor. This is recommended to find an optimized solution for each case as there can be significant differences between motors available in the market.

Any precautions necessary when replacing IE2 motor with IE3, e.g. change of incoming fuse, contactor, cable?

Answer

When you change a motor you always have to check how well the new motor data is matching the current design of the system. Mainly because there are many different motor brands and motor designs out in the market. For example, the motors from ABB have for many years had an efficiency in line with IE3 motors, so when comparing the motor data you may find IE3 motors having the same data as the old motor you are replacing.

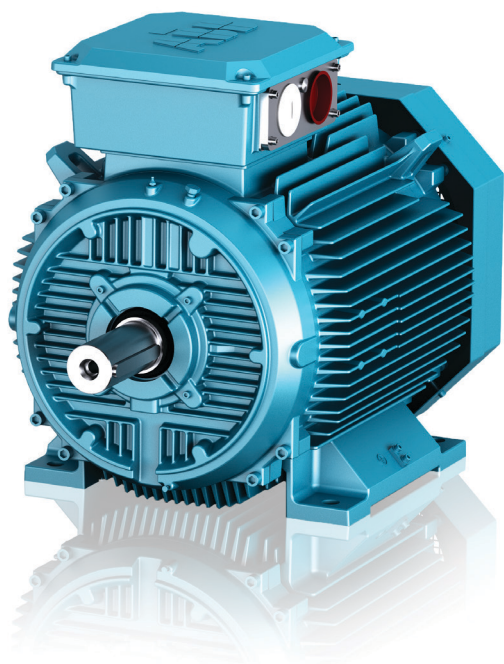
If you are unsure, you can always use the ABB Selection tool for motor starters (SOC) to find the correct devices to be used when starting an IE3 motor. If you are not able to find the combination you are looking for, please contact ABB for consultancy. We are constantly working with developing the coordination tables to match the market needs.

If fuses are used in the old installation, and if the starting current (locked rotor current) on the new motor are significant higher than before, then you might need to check the fuse size. Use the same selecting rules as before.

If the starting current is high and too close to the fuse tripping curve, you may have some ageing of the fuse causing it to trip without having a "fault" in the system.

The sizing of the cable normally has margins and will be able to remain as is. We have not seen any cases when a change of the cable has been needed.

Thermal conditions will remain as they are from the even lower rated current.



When you change a motor you shall always check how well the new motor data is matching the current design of the system.

ABB solutions for starting and protecting IE3 motors

Frequently asked questions

Need to re-adjust overload device such as MMS, thermal relays, MCCBs? For thermal protection a lower rated current it would make sense, however magnetic tripping shall occur on higher ratings.

Answer:

– Thermal protection.

When making changes in an installation you shall always make sure that the used thermal motor protections, like thermal overload relays and Manual Motor Starters, are set on the rated motor current. When changing a motor to one with higher efficiency, you can expect the rated current to be lower. But the difference will not be significant. We are talking about some percentage. So modify the setting on thermal overload relays will most likely not be needed.

– Instantaneous protection

In case of using a MMS from ABB, there are some few cases when you may need to change to a newer MMS which can handle the inrush peak from the IE3 motors. But as in all cases check the motor data on the motor, and compare. The difference might be very small. In case of MCCB's, the instantaneous protection may need to be adjusted to match the starting and inrush current.

You can always use the ABB Selection tool for motor starters (SOC) to check a solution. There you will find the suitable solution for the IE3 installations.

Can we still use IE2 selection tables in current catalogues, e.g. DOL and wye-delta motor start?

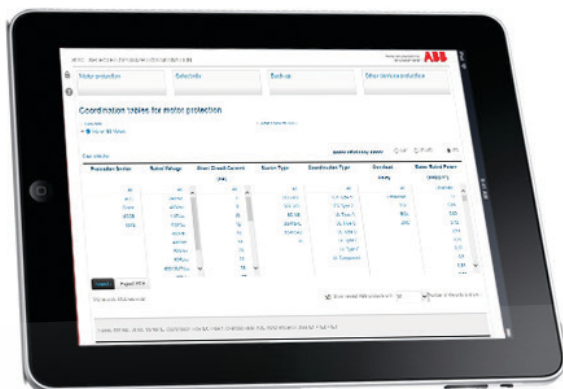
Answer

The ABB selection tool for motor starters (SOC) indicates for which motors the selection is valid and this goes for all types of motors, IE1/IE2 as well as IE3.

When working with coordination, the motor data is the key data for the correct selection. And "IE2 data" can be valid also for IE3 motors, in the case when the locked rotor current is lower than 7,5 times the rated current. And this can absolutely be the case as the motor characteristics differ a lot both between brands, size and number of poles in use etc. So for an optimized solution, always check the exact motor data. The same is valid for the wye-delta starters.

IE2 and IE1 motors installed don't require changes and in these cases the IE1/IE2 coordination can be used for the repairing an old installation.

The same goes for equipment for export outside Europe, as there are large parts of the market that still are not demanding the use of premium efficiency motors.



<http://applications.it.abb.com/SOC/Motor>

The ABB selection tool for motor starters (SOC) indicates for which motors the selection is valid and this goes for all types of motors, IE1/IE2 as well as IE3.

ABB solutions for starting and protecting IE3 motors

Frequently asked questions

Will we have new specific tables for IE3 with power and current ratings for different voltages? (incl. DOL and wye-delta)

Answer

We already have new coordination tables available matching the higher starting currents. So when a motor shows a locked rotor current that are higher than 7,5 times rated motor current, we recommend you to use these IE3 tables. If lower than 7,5 times, you can still go for the IE1/IE2 tables. The same goes for the why –delta starters.

The catalogues will remain hence the existing tables, e.g. coordination tables for wye-delta, are available and can be used.

How can we be sure that the ABB solution is working?

Answer

We have performed tests and analysis on motors available on the market, and we have used the results to check our own design and verification of our products.

ABB is continuously following the changes on high efficiency motor market in order to implement in due time necessary measures for use.

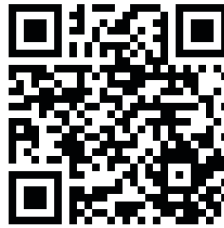
ABB participates in IEC working groups and IEC High Efficiency Motor Task Forces, which are working on updating the relevant product standards for motor starters.

As we know the requirements and as we have very modern products in our portfolio, we have been able to match the performance to these high and premium efficiency motors from the beginning.

Coordination is quite complex and there are many parameters to check when making a complete coordination, so it is not only the motor data that matters.

That's why we promote to use the coordination tables we have prepared, to help the customers to find a safe and reliable solutions independent of type of motor. You find these readymade tables in the on-line tool on the ABB low voltage site. The name of the tool is SOC – Selected Optimized Coordination. Hope you will find it useful.

Visit our website with this QR-code or the link below for more information about our IE3 ready products and how to get in touch with your local sales unit.



<http://new.abb.com/low-voltage/campaigns/ie3-ready>

ABB AB Control Products

Low Voltage Products

SE-721 61 VÄSTERÅS, Sweden

<http://new.abb.com/low-voltage>

Note

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents - in whole or in parts - is forbidden without prior written consent of ABB.

© Copyright 2015. All rights reserved.