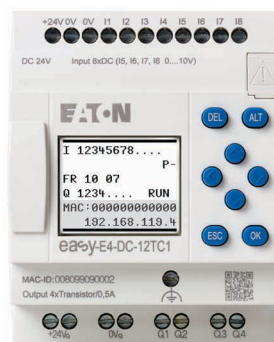


## easyE4 and EMR6 – the perfect match for safe motor control



### The perfect synergy of intelligent control relay and monitoring relay.

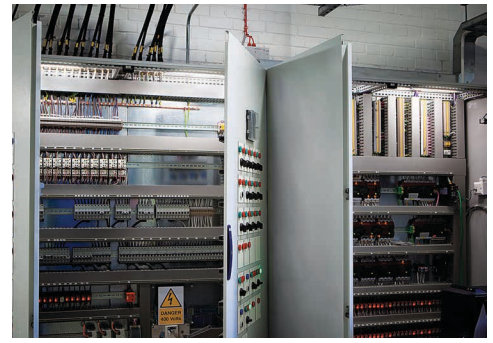
There are many different causes of motor damage, which often also pose a danger to users. In the best-case scenario, the only consequence of phase imbalances or faults in the phase sequence will be a higher heat dissipation rate. However, such faults may also lead to thermal stress and thus to motor damage. The EMR6 measuring and monitoring relays offer perfect protection. In combination with the easyE4 control relays, they enable efficient motor control with integrated self-monitoring.

Safe	Fast	Simple	Approvals
Monitoring of <ul style="list-style-type: none"> <li>• phase imbalances</li> <li>• phase sequences</li> <li>• phase failure</li> <li>• overvoltages</li> <li>• undervoltages</li> <li>• overloads</li> </ul>	<ul style="list-style-type: none"> <li>• The comprehensive on-board communications reduce costs and improve the control capabilities of the devices</li> <li>• Interrupt inputs for short response times in the event of a fault</li> </ul>	<ul style="list-style-type: none"> <li>• Easy motor-control programming via easySoft7</li> <li>• Integrated web server for easy visualization</li> <li>• Easy configuration of the EMR6 monitoring relays, directly on the device</li> </ul>	<ul style="list-style-type: none"> <li>• UL</li> <li>• CCC</li> <li>• DNV GL</li> <li>• EAC</li> <li>• RoHS</li> </ul>

## Network monitoring (phase imbalances, phase loss)

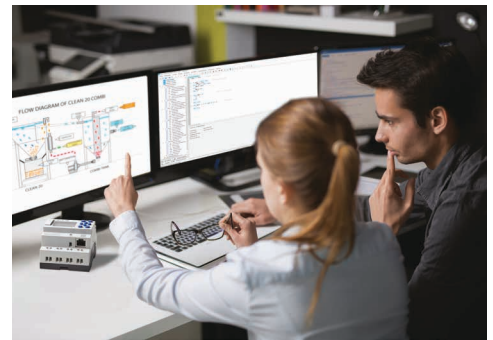
- **Phase imbalance monitoring-** In motor control systems, maintaining phase balance is crucial for clean and fault-free operation. Phase imbalances may be the result of uneven load distribution among the three phases.  
In the best-case scenario, a phase imbalance will simply result in decreased motor efficiency and the generation of reactive power. However, it may also subject the components to thermal stress and thereby damage them.
- **Phase sequence monitoring-** If two phases on a motor are swapped, the magnetic field inside the motor will be reversed, which also reverses its direction of rotation. This can have dangerous consequences, both for the application and for machine operators. Typical scenarios include a pump running empty or a conveyor belt running in the opposite direction, thereby interrupting the production process.
- **Phase loss monitoring-** If one motor phase in a three-phase network fails, the motor load becomes uneven, which in turn subjects the individual components to high thermal stress. This thermal stress is caused by the higher current intake at the other two phases, which is needed to maintain the rated power. In the worst case, the thermal stress may be so severe that it leads to the destruction of the machine and to human injury.

The EMR6-AWM multi-functional phase imbalance monitoring relay combines all these monitoring functions in one device and effectively protects your application against the typical dangers of three-phase networks.



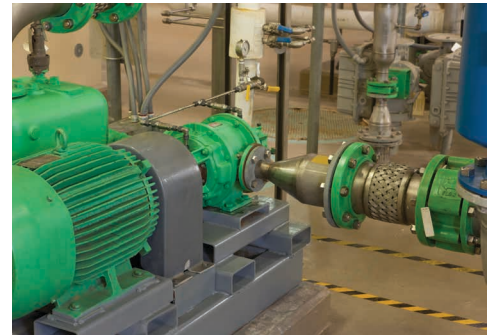
## Motor control

- **Programming-** When programming the easyE4, users can choose between four different programming languages and a large selection of predefined program blocks. The easyE4 offers flexible programming options, either directly on the device or via the easySoft software.
- **Short response times-** The interrupt inputs of the easyE4 allow for response times of less than 2 milliseconds, which ensures fast shutdown in the event of a fault.
- **Synchronization of several motors-** The DCF77 radio technology enables the precise synchronization of motors, even at different locations.
- **Remote control-** The integrated web server not only facilitates remote visualization of the easyE4's operating behavior, but also makes it possible to control the program remotely. This interface can be used to monitor and control the motors.



## Motor protection

- **Overload monitoring-** Overloads are the most common cause of motor failure and damage. If the motor malfunctions or a workpiece is stuck, both the load and the voltage on the motor will increase. By monitoring the motor voltage, such faults can be detected at an early stage to protect the motor against damage.
- **Undervoltage monitoring-** The detection of undervoltages also makes it possible to identify faults in the application sequence. In the event of a broken belt or any missing workpieces, the motor can be switched off, for example. The idling of the motor at maximum speed will significantly increase wear on the components and consume unnecessary energy.



## Management and communications

- **Communications-** Modbus TCP via the on-board Ethernet interface, for integration into higher-level networks and for networking with other control units at field level.
- **Flexible expansion of the input/output level-** The easyE4 has 8 digital inputs and outputs, which can be expanded by adding up to 11 expansion modules. In total, each easyE4 can thus accommodate up to 188 inputs/outputs.
- **Integrated web server-** The integrated web server facilitates comprehensive visualization on smartphones and computers and allows for the easyE4 to be controlled via internet.



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