

ANSI ECMA15:2010



Specifications for Cable-less Controls for Electric Overhead Traveling Cranes

Abstract:

The purpose of this specification is to provide information regarding the governmental requirements, safety benefits and applications for radio frequency directional devices used in controlling the movements and actions of electric overhead traveling cranes in material handling applications. The scope is limited to remote or cable-less controlling devices that utilize radio frequency as a means of transmitting directions and information to electric overhead traveling cranes.



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American National Standard

**Specifications for Cable-less Controls for
Electric Overhead Traveling Cranes**

Electrification and Controls Manufacturers Association (ECMA)

A Product Section of Material Handling Industry of America (MHIA),
MHIA is a Division of Material Handling Industry

Approved November 18, 2010

American National Standards Institute, Inc.

Disclaimer

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Foreword (This foreword is not part of American National Standard EMCA15)

This specification has been developed by the Electrification and Controls Manufacturers Association (ECMA), a Product Section of Material Handling Industry of America (MHIA) for the purpose of promoting standardization and providing a basis for equipment selection. The use of this specification should not limit the manufacturer but should provide guidelines for technical procedure.

As a result of new technological advances and innovations of cable-less communication controls, these devices have progressed to a point where their use to control EOT (Electric Overhead Traveling cranes) is becoming as common as traditional methods. The ECMA, having recognized their increased use, saw a need to develop a standard aimed to provide guidelines for their safe design and implementation.

Material Handling Industry

The Material Handling Industry (MHI) provides ECMA with certain services and, in connection with this Standard, arranges for its production and distribution. The Material Handling Industry nor its officers, directors, and employees have any other participation in the development and preparation of the information contained in the Standard.

All inquiries concerning the Standard should be directed in writing to the ECMA Engineering Committee, 8720 Red Oak Boulevard, Suite 201, Charlotte, NC 28217.

The use of this Standard is permissive, not mandatory. Voluntary use is within the control and discretion of the user and is not intended to, and does not in any way limit the ingenuity, responsibility, or prerogative of individual manufacturers to design cable-less controls for electric overhead traveling trains which do not comply with this Standard. ECMA has no legal authority to require or enforce compliance with this Standard. This advisory Standard provides technical guidelines to the user for his specific application. Following the Standard does not assure compliance with applicable federal, state, or local regulations and codes. This Standard is not binding on any person and does not have the effect of law.

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In the interest of safety, all users of cable-less controls are advised to regularly inspect and properly maintain the integrity of their device by assuring proper operational, housekeeping, and maintenance procedures.

Users of the Standard must rely on competent advice to specify, test, and/or design the cable-less controls for their particular application. This Standard is offered as a guideline. If a user refers to, or otherwise employs, all or any part of this Standard, the user agrees to follow the terms of indemnity, warranty disclaimer, and disclaimer of liability.

The members of ECMA at the date of approval were:

Avtron Manufacturing
Cattron Group International
Conductix-Wampfler
Control Chief Corporation
HBC-radiomatic, Inc.

Magnetek, Inc.
Microtronics, Inc.
Morris Material Handling, Inc.
Power Electronics International, Inc.

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Specifications for Cable-less Controls for Electric Overhead Traveling Cranes

1 SCOPE

The specifications and information contained in this standard apply to cable-less controls for electric overhead traveling cranes. Cable-less controls are also referred to as wireless or remote controls. The specifications in this standard are general in nature. Other and more detailed specifications may be agreed upon between the purchaser and the manufacturer to suit each specific installation.

2 DEFINITIONS AND ACRONYMS

Address Code: A number which is used by the Machine Control Unit (MCU) to identify the frames sent by its respective Operator Control Unit (OCU).

Cable-less Controls: Means by which the operator commands are transmitted without any physical connection for at least a part of the distance between the console and the Electric Overhead Traveling Crane (EOT). Cable-less controls are also commonly referred to as Remote or Wireless Controls.

Electrical Interlock: An effective isolation of the control circuits with the use of rotary switch contacts, relay contacts or with the use of a programmable logic controller and its input/output modules.

Electric Overhead Traveling crane (EOT): An electrically operated machine for lifting, lowering and transporting loads, consisting of a movable bridge carrying a fixed or movable hoisting mechanism and traveling on an overhead runway structure.

Error Detection Code (EDC): A number added to each frame to enable the MCU to detect transmission errors. (The MCU re-defines the error detection code using similar algorithm as is used in the OCU. The commands are only carried out if the error detection code so defined by the MCU is identical to the error detection code it received with the frame.

Frame: A collection of contiguous data bits the OCU transmits to the MCU. For example, a frame may contain the following:

- A. address code;
- B. operating command signals;
- C. other control signals;
- D. error detection (and correction) code.

The frame is formed out of the above mentioned parts by coding them into a serial form. After this coding, the frame is sent to a circuit called a modulator which transforms it into a suitable form for sending.

Field Bus: An industrial network system for real time distributed control, typically employing a two wire communication scheme. Common Field Bus standards are CAN, Device Net, Interbus, Lon Works, Modbus, PROFIBUS, etc.

Main Line Contactor: A magnetic contactor used in the incoming power circuit from the main line collectors.