

# INTERNATIONAL STANDARD

**IEC**  
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## **Telecontrol equipment and systems**

### **Part 5:**

Transmission protocols

Section 2: Link transmission procedures

*Matériels et systèmes de téléconduite*

*Partie 5:*

*Protocoles de transmission*

*Section 2: Procédures de transmission de liaison  
de données*



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**TELECONTROL EQUIPMENT AND SYSTEMS****Part 5: Transmission protocols****Section 2: Link transmission procedures**

## FOREWORD

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This section of International Standard IEC 870-5 has been prepared by IEC Technical Committee No. 57: Telecontrol, teleprotection and associated telecommunications for electric power systems.

The text of this section is based on the following documents:

DIS	Report on Voting
57(CO)57	57(CO)60

Full information on the voting for the approval of this section can be found in the Voting Report indicated in the above table.

Annex A is an integral part of this section.



## INTRODUCTION

This section of IEC 870-5 is part of a series which highlights specific requirements and conditions for data transmission in telecontrol systems and describes ways to meet those requirements.

In terms of the OSI (Open System Interconnection) reference model of ISO-CCITT, which subdivides communication into seven layers, this section is concerned with the procedures required by the second layer: the link layer.

Section 1 covers the two bottom layers: the physical layer and the link layer, the latter being explained in terms of admissible frame formats and rules for frame synchronization. This section specifies standard link transmission procedures which operate on the link layer.

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## TELECONTROL EQUIPMENT AND SYSTEMS

### Part 5: Transmission protocols

#### Section 2: Link transmission procedures

##### 1 Scope and object

###### 1.1 Scope

This section of IEC 870-5 applies to telecontrol equipment and systems with coded bit serial data transmission for monitoring and controlling geographically widespread processes.

The defined link procedures are restricted to message transmission sequences operating with size 1 windows. This means that the link layer of the primary station (station that initiates a message transfer) accepts a request for a new message transfer only when a previously accepted request for a message transfer is terminated either successfully or with an error indication. The procedures are applicable to balanced and unbalanced transmission in telecontrol systems using half duplex or duplex transmission channels.

###### 1.2 Object

The standard transmission procedures defined by this section are applicable to point-to-point, multiple point-to-point, multipoint-star, multipoint-partyline and multipoint-ring configurations as described in 4.4 of IEC 870-1-1.

The data transmission functions in these systems are composed of three basic types of link transmission services, namely:

1. SEND/NO REPLY
2. SEND/CONFIRM
3. REQUEST/RESPOND

The two services SEND/CONFIRM and REQUEST/RESPOND consist of a sequence of non-separable dialogue elements between requesting stations and responding stations.

The protocol defined in this section accepts and processes only a single link transmission service at a time in each direction of a bidirectional communication system. Each transmission service is terminated either successfully or with error reports before the next transmission service begins. This means that the window size for successive packet transfers is 1 and the specified error recovery for the transmission services SEND/CONFIRM and REQUEST/RESPOND utilize the stop-and-wait method for automatic repeat requests (ARQ).