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Irrigation techniques - Remote monitoring and control for irrigation systems - Part 1: General considerations

Bewässerungsverfahren - Fernüberwachung und Fernsteuerung von Bewässerungssystemen - Teil 1: Allgemeine Betrachtungen

Techniques d'irrigation - Contrôle et télésurveillance des installations - Partie 1: Considérations générales

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 15099-1:2007) has been prepared by Technical Committee CEN/TC 334 “Irrigation techniques”, the secretariat of which is held by AENOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2007, and conflicting national standards shall be withdrawn at the latest by November 2007.

EN 15099 *Irrigation techniques — Remote monitoring and control for irrigation systems* consists of the following parts:

Part 1: General considerations

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The objective of the "Remote monitoring and control for irrigation systems" standards is to establish the specifications for the telecontrol system for irrigable areas and the physical and functional requirements of the elements that constitute the RMCS, placing special emphasis on guaranteeing the collective services provided by the hydraulic infrastructure for a group of users.

1 Scope

This part of EN 15099 establishes the definitions, functionalities and specifications related to remote monitoring and control for irrigation systems and its elements.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE It includes both general terms and those specific to irrigation networks and telecontrol elements, providing the precise definition applied in this European Standard.

2.1 General

2.1.1
irrigation community
legal and administrative entity established to make use of water resources, the objective of which is to manage and fund water intake between users, as well as to manage and fund common operating and maintenance expenses.

2.1.2
user
entity that uses the water supplied to a plot

2.2 Irrigation network

2.2.1
supply source
water supply structure as: river, canal, reservoir, collection pool, bore hole, etc.

2.2.2
intake point
location of the intake from the supply source (in case of gravity distribution, each intake from the channel)

2.2.3
sector
irrigable area supplied by each intake point

2.2.4
subsector
irrigable subarea within a sector that is functionally independent from the rest of the sector

2.2.5
group (irrigation block)
irrigable area within a sector in which flow rate and pressure are under communal control

2.2.6
plot
irrigable area within a group which has autonomy with regard to crop and unitary control of consumption

2.2.7
primary pipeline
connection between the intake point and each subsector or set of groups

2.2.8
mainline
connection between the end of each primary pipeline and the control point for each group or irrigation block

2.2.9
manifold
pipeline connection between the control point for each group or irrigation block and the control point for each plot

2.2.10
lateral pipeline
connection between the control point for each plot and the application elements in the field

NOTE It is not considered as an element of the distribution network.

2.2.11
tap
element used to control water supply and deliver water to the plot, installed on the manifold pipeline

2.2.12
hydrant
element connected, within the plot, to the lateral pipeline

2.2.13
valve
device to control the supply of flow in an irrigation distribution system

2.2.14
water-meter
device which indicates the total volume of water passing through the valve

2.3 Telecontrol system

2.3.1
remote monitoring and control for irrigation system
RMCS
group of elements able to operate geographically widespread networks according to user decisions or pre-defined parameters, and capable of storing and monitoring performance parameters

2.3.2
central control unit
CCU
group of devices intended to collect and process manually or automatically the system status parameters (valve status, water meter reading, level transmitter reading, engine status etc) for management purposes (collecting data, generating current and historic reports and making irrigation management decisions)

2.3.3
concentrator station
CTR
station in a hierarchical telecontrol network where monitored information from Remote Terminal (RT) is concentrated for transmission to the Central Control Unit (CCU) and where the command information from a CCU is distributed to the RT

2.3.4
intermediate station
station intended to manage the transfer of information and bidirectional communication between CCU and CTR or RT

2.3.5
remote terminal
RT
equipment intended to operate in an actuator according to CCU instructions, as well as to read any physical parameter to be transmitted to the CCU

2.3.6
monitored information
irrigation network information which characterised the state or the change of state of equipment. This information appears graphically or numerically monitored in the CCU

2.3.7
analogue signal
signal in the form of a continuously variable value

[IEC/TR3 60870-1-3:1997]

2.3.8
baud, Bd
unit of modulation rate or unit of transfer rate of signal elements of constant duration in a discretely timed or digital signal

[IEC/TR3 60870-1-3:1997]

NOTE The number of baud is equal to the reciprocal of the duration in seconds of the shortest signal element or of the unit interval in such a signal.

2.3.9
command
information used to cause a change of state of the operation equipment

[IEC/TR3 60870-1-3:1997]

2.3.10
control
purposeful action on a system or device to obtain the specified objectives by the user

2.3.11
counter pulse
meter pulse
pulse representing one incremental unit

[IEC/TR3 60870-1-3:1997]

2.3.12
cycle time
time interval between consecutive appearances of any information that is transmitted periodically

[IEC/TR3 60870-1-3:1997]

2.3.13
cyclic transmission
transmission method in which the message sources are scanned and messages are transmitted according to a definite sequence

[IEC/TR3 60870-1-3:1997]