

# **EUROMAP 15**

## **PROTOCOL FOR COMMUNICATION BETWEEN INJECTION MOULDING MACHINES AND A CENTRAL COMPUTER**

May 1993

This recommendation was prepared by the Working Group "Electronic Control of Injection Moulding Machines" of EUROMAP.

### **Scope and Field of Application**

The EUROMAP 15 recommendation defines a protocol for data communication between injection moulding machines and a central computer.

By following the EUROMAP 15 protocol, any company will be able to develop equipment which will communicate with any EUROMAP 15 protocol compatible product manufactured by other companies.

EUROMAP 15 will serve the total identification of all needs, hardware and software, that must be satisfied for a successful communication. It specifies all target values, actual values and control data for the data exchange between injection moulding machines and a central computer.

The complete EUROMAP 15 recommendation consists of 8 parts:

Part:	Title	Actual Version
Part 1:	Basic Communication	1.2 May 90
Part 2:	Production Monitoring and Control	1.2 May 90
Part 3:	Data Set Transfer	1.2 May 90
Part 4:	Variable Transfer	1.3 May 93
Part 5:	Process Data Transfer for SPC	1.1 Dec. 91
Part 6:	Gateway to Peripheral Devices (EUROMAP 17)	1.0 Feb. 92
Part 7:	Time Stamping	1.0 Apr. 92
Part 8:	Attribute Data Transfer for SPC	1.0 May 93

In a minimal system at least part 1, basic communication, and part 2, production monitoring and control, have to be implemented in order to claim EUROMAP 15 conformance.

Parts 3 to 8 are optional but their implementation is highly recommended.

## General Overview

**Part 1**, basic communication protocol, defines the telegrams and data structures necessary to establish a communication between a central computer and one or several injection moulding machines by means of the master/slave principle. The central computer is the master, whereas the injection moulding machines are slaves.

Remark: A telegram is one single message transferred from the central computer to an injection moulding machine or vice versa.

**Part 2**, production monitoring and control, defines the telegrams and data structures necessary to transfer production monitoring and control data such as:

job codes, part codes, data set identification,  
production target, job status, production status,  
machine status, alarm messages

**Part 3**, data set transfer, defines the telegrams and data structures necessary to transfer machine setting data sets from the machine controller to the central computer (data set upload) and from the central computer back to the machine controller (data set download).

**Part 4**, variable transfer, defines the telegrams and data structures necessary to transfer single variables or variable arrays from the machine controller to the central computer (variable upload) and from the central computer back to the machine controller (variable download).

**Part 5**, process data transfer for statistical process control (SPC), defines the telegrams and data structures necessary to collect process data from the machine controller required to perform statistical process control or any other data evaluation on the central computer.

**Part 6**, gateway to peripheral equipment via EUROMAP 17, defines the telegrams and data structures necessary to exchange any kind of data which can be transferred between an injection moulding machine and peripheral equipment connected by EUROMAP 17 interface also between the central computer and the peripheral equipment directly.

Remark: EUROMAP 17 is the definition of a protocol for communication between injection moulding machines and peripheral equipment such as temperature controllers, dryers, material feeding systems, handling devices, quality control systems.

**Part 7**, time stamping, defines the telegrams and data structures necessary to obtain time and date belonging to the selected responses of the machine controller.

**Part 8**, attribute data transfer for statistical process control (SPC), defines the telegrams and data structures necessary to collect attribute data from the machine controller required to perform statistical process control or any other data evaluation on the central computer.

# **EUROMAP**

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