

COMPACT DATA PROGRAMMING SYSTEM with SmartModules



In modern electronic assemblies, **writing production data** is a crucial step to correctly initialize components and configure them for specific applications. Typical data include serial numbers, hardware or software versions, calibration data, network addresses (e.g. LIN IDs) or product variant information.

These are essential for **traceability** as well as function and communication and are often written in late production stages, requiring information of various previous manufacturing steps.

INITIAL SITUATION

A leading automotive supplier needed an efficient system for automated programming of production data in electronic assemblies. Function tests were not required - speed and reliability were key. The new programming system needed to be simple, **flexible** and independent of central systems.

OBJECTIVES AND CHALLENGES

Prior to this project, programming was done manually: the operator had to collect data from different sources and programs and had to transfer them to the control unit step by step.

There was no provision for automatic results verification or structured process documentation, making programming **error-prone, time-consuming** and **difficult to scale**.

REQUIREMENTS

From the initial situation and objectives, clear requirements were identified for the new solution:

- **Error prevention:**
The manual entry of multiple data sources needed to be replaced by automated processes
- **Time saving:**
The sequential processing of individual steps needed to be converted into a continuous, automated flow
- **Documentation:**
Every programming operation needed to be automatically logged and archived for traceability
- **Usability:**
Clear visual instructions for improved user guidance, as well as simple manual contacting of the electronic assembly
- **Flexibility:**
The system needed to be quickly adaptable to different product variants and changing data sets
- **Independence:**
Operation without network connection needed to be possible

COMPACT DATA PROGRAMMING SYSTEM with SmartModuleS

SOLUTION CONCEPT

The project was realized using the modular **MCD SmartModuleS** system - a cost-efficient solution characterized by its compact design, modular expandability and autonomous control.

MEETING THE REQUIREMENTS

- **Error prevention:**
The central control application automates data transmission - manual procedures are no longer necessary
- **Time saving:**
Programming is fully automated without intermediate steps or testing
- **Documentation:**
The integrated software automatically logs all programming operations and enables export e.g. as a CSV file
- **Usability:**
An intuitive user interface and guided manual contacting visually support the operator during programming
- **Flexibility:**
The modular architecture of MCD's **SmartModuleS** with interchangeable modules allows for easy adaptation to new components and requirements
- **Independence:**
Offline operation eliminates the risk of failure due to network dependencies

CUSTOMER BENEFITS

The **MCD SmartModuleS** based system, enabled the customer to realize several key improvements. The efficiency of data programming increased significantly, as the manual transfer of production data is automated and does not require additional verification tests.

The flexibility of the system allows easy reconfiguration for new assemblies or product variants - without additional programming effort. Guided manual contacting and the intuitive user interface ensure **safe** and **user-friendly** operation, even without specialist knowhow.

Offline functionality enhances independence from external production systems and reduces potential sources of error. Automatic logging of all programming operations enables **complete traceability** and contributes to quality control.

MCD **SmartModuleS** IN DETAIL (USED MODULES):

- // Main Module with integrated industrial PC and all necessary interfaces
- // DigIO8 module for digital control of external components
- // Elmos LIN converter for data transmission via LIN protocol

MCD TESTMATE SOFTWARE-APLIKATION:

- // Application for automated control of data programming
- // User interface for selecting and managing data sets
- // Visual guidance of the operator during manual contacting
- // Export functions for complete documentation

