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DCS ADAPTER

RELEASE 2.1

FUNCTIONAL REQUIREMENT SPECIFICATION

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Allen-Bradley • Rockwell Software

Rockwell Automation

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Chapter 1

Introduction

This document details the requirements of the functions implemented for the DCS Adapter, an adapter between Rockwell Automation Manufacturing Execution Systems (MES; Level 3 for enterprise integration) and Distributed Control Systems (DCS; Level 2 for enterprise integration).

Each requirement is composed of a name and a unique identifier (e.g. API - Create a DCS Batch (SR9100.1)). If a requirement's meaning is for requirement grouping only, the identifier is appended by a plus sign (e.g. Application Programming Interfaces (SR9100+)).

In some cases, additional context information is available, indicated in the document by a frame and a gray background color. This context information is related to the respective requirement, but not part of the formal requirement description.

The revision history (page 11) lists the changes made to the document with DCS 2.0 as comparison baseline. Changes related to a requirement are marked as "Editorial", "Update", "New", or "Deleted", changes to the additional context information are marked as "Context information-related".

Typographical Conventions

This documentation uses typographical conventions to enhance the readability of the information it presents. The following kinds of formatting indicate specific information:

Bold typeface Designates user interface texts, such as

- window and dialog titles
- menu functions
- panel, tab, and button names
- box labels
- object properties and their values (e.g. status).

Chapter 2

Application Programming Interfaces (SR9100+)

➢ For recent changes, see revision history (page 11).

Interfaces to a Distributed Control System support the communication between an MES and the connected DCS.

The interface towards the MES is implemented in Java, while the interface to the DCS uses XML-formatted messages.
The messages format is based on S88/S95 standards and B2MML, an XML implementation of the standards.
Typically, a middleware component, e.g. EIHub or Apache Camel, is used to connect the DCS Adapter to the specific Distributed Control System and technology.

For further details on the architecture, Java API, or XML message formats, please see "Technical Manual DCS Adapter" [A1] (page 9).

Create a DCS Batch (SR9100.1)

An MES can request the creation of a batch on the DCS.

- The request contains the desired DCS batch ID.
- In the reply, the DCS indicates whether the batch creation was successful or an error has occurred and returns the internal unique batch ID of the created batch.

Get Values from a DCS Batch (SR9100.2)

An MES can request to get values from a batch on the DCS.

- The request contains a list of the IDs and paths of the value to be fetched.
- In the reply, for each ID and path, the DCS returns the value if it is already available or an error message if the values could not be fetched successfully.

Get GxP-relevant Alarms from the DCS (SR9100.3)

An MES can request to get the GxP-relevant alarms from the DCS.
The alarms can be related to a batch, a unit, and/or a particular timeframe depending on the request parameters.

- The request contains the query parameters that restrict the list of alarms.
- In the reply, the DCS returns the list of alarms matching the query or an error message if the alarm could not be fetched successfully.

Set Order Context (SR9100.4)

➢ For recent changes, see revision history (page 11).

An MES can request to set an order context on the DCS.

- The request contains the order-related data including the list of material parameters.
- In the reply, the DCS indicates whether the order context could be set successfully or an error has occurred.

Get Consumed Material (SR9100.5)

➢ For recent changes, see revision history (page 11).

DCS can notify an MES that material has been consumed.

- The request contains information about the consumed material.
- In the reply, the MES indicates whether the **consumed material** event was processed successfully or an error has occurred.

Get Produced Material (SR9100.6)

➢ For recent changes, see revision history (page 11).

DCS can notify an MES that material has been produced.

- The request contains information about the produced material.
- In the reply, the MES indicates whether the produced material event was processed successfully or an error has occurred.

Get Information of an MES Batch (SR9100.7)

➢ For recent changes, see revision history (page 11).

DCS can request to get information of a batch on an MES.

- The request contains the batch ID and material of the batch for which information is required.
- In the reply, the MES returns all relevant batch information.

Chapter 3

Integration Implementations

The following integration implementations are available for Rockwell Automation products:

- PharmaSuite MES integration points
  For the PharmaSuite MES solution, deployable integration components are available.
  For more information, please refer to PharmaSuite and its "Functional Requirement Specification DCS Phases" [A2] (page 9).
- PlantPAx DCS integration Points
  For the PlantPAx DCS integration, please refer to the solution provided by your Rockwell Automation contact.

Chapter 4

Reference Documents

The following documents are available from the Rockwell Automation Download Site.

No.	Document Title	Part Number
A1	Technical Manual DCS Adapter	DCTMAD-GR001C-EN-E
A2	PharmaSuite Functional Requirement Specification DCS Phases	PSFRSDC-RM001D-EN-E

TIP

To access the Rockwell Automation Download Site, you need to acquire a user account from Rockwell Automation Sales or Support.

Appendix A

Document Information

The document information covers various data related to the document.

Approval

This document has been approved electronically via the Rockwell Automation Document Management System (DMS). The required approvers of this document include the following:

Name	Role
Martin Dittmer	Product Manager
Steffen Landes	Development Manager
Martin Irmisch	Test Manager

In addition, the electronic document approval via DMS is confirmed by a handwritten signature of all approvers in the Quality Document when the release is completed. The Quality Document summarizes the quality-related planning activities and results of a PharmaSuite release.

Version Information

Object	Version
DCS Adapter	2.1
Functional Requirement Specification	1.1

Revision History

The following table describes the history of this document.

Changes related to the document:

Object	Description	Document
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Changes related to "Application Programming Interfaces" (page 3):

Object	Description	Document
Set Order Context (SR9100.4) (page 4)	New New request to set an order context on a DCS.	1.0
Get Consumed Material (SR9100.5) (page 4)	New New request to notify an MES that some material has been consumed.	1.0
Get Produced Material (SR9100.6) (page 4)	New New request to receive data related to produced material from a DCS.	1.0
Get Information of an MES Batch (SR9100.7) (page 5)	New New request to receive information of a DCS batch.	1.0
Application Programming Interfaces (SR9100+) (page 3)	Context information-related ElHub is a typical middleware component. No change of code.	1.1

Changes related to "Integration Implementations" (page 7):

Object	Description	Document
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