SMART
SENSOR
BUSINESS

Leuze electronic

the sensor people

OPC-UA

EN 2019/03/19 - 50141930

Technical description

1 Introduction

1.1 About this document

This document is an introduction to the *Open Platform Communication – Unified Architecture* (OPC-UA) and provides an overview of the properties and functions of the OPC-UA-capable devices from Leuze electronic.

- An introduction to OPC-UA as a communication standard for Industry 4.0 systems.
- The essential features of OPC-UA and of the OPC Foundation are briefly explained in chapter "Fundamentals."
- Important technical terms in the context of OPC-UA are explained in chapter "Terms."
- The characteristics of the Leuze electronic-specific OPC-UA server implementations are also described.

1.2 Data communication in Industry 4.0

Data plays a central role in Industry 4.0. With Industry 4.0 or IIoT, focus is primarily on data and the exchange of data across all system boundaries. Most of this data is generated with the help of sensors.

The fundamental job of a sensor is to record sensor data and to convey this data to the outside via the interface.

- With simple binary switching sensors, this is usually just one switching bit.
- With distance measuring sensors, an analog output is often used as the interface.
- In the case of absolute value encoders, the position information is generally transferred via serial interfaces, e.g. SSI.

These interfaces, however, are only suitable for transmitting process data. In the long term, these interfaces will likely also be authorized for the transmission of process data. Additional and new protocols and interfaces via which data other than process data is transmitted will, however, come into play.

Important considerations for a path towards Industry 4.0 are the topics of diagnostics, predictive maintenance, recipe changes as well as format changeover during the configuration of machines and systems during production operation.

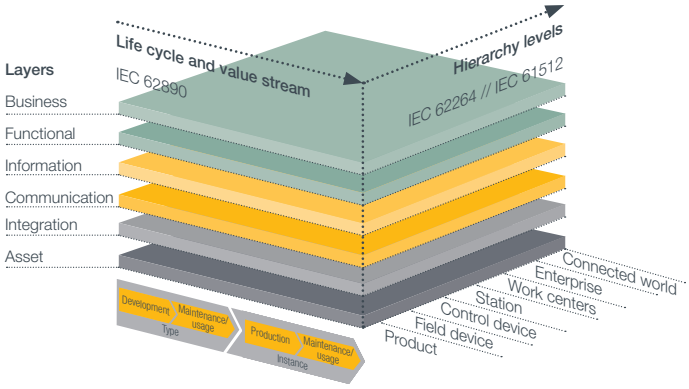
For this purpose, it is necessary to exchange diagnostic and configuration data with the sensor. To this end, the sensor must be equipped with communication interfaces via which the more complex data can be transmitted. Depending on performance requirements and cost, this can be a fieldbus interface (e.g. PROFINET) or a standardized serial communication interface (e.g. IO-Link).

The process data as well as the diagnostic and configuration data can be exchanged with the control system via these interfaces. The implementation of such an interface is one of the first steps toward greater data transparency and, therefore, is a step toward Industry 4.0 as well.

1.3 Reference architecture model RAMI 4.0

An intelligent and standardized data interface is the prerequisite for high data transparency and thus, a basis for Industry 4.0. The interface alone is not enough yet, however, to be able to realize Industry 4.0 systems.

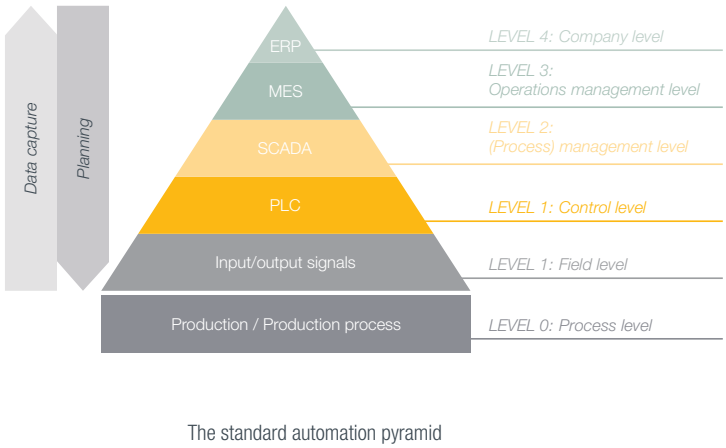
The RAMI 4.0 reference architecture model of the "Industry 4.0" (VDI/VDE and ZVEI) platform provides a representation for Industry 4.0. In this model, the properties of Industry 4.0 components are shown in three dimensions.



Source: Plattform Industrie 4.0

Fig. 1.1: Reference architecture model Industry 4.0 (RAMI 4.0)

- The first dimension describes the lifecycle of the product. Data about the product, such as production data, data sheets, configuration data, etc., is collected here.
- Described in the second dimension is the IT representation.
- In the third dimension, a hierarchy is recorded. This is, in principle, similar to the familiar automation pyramid, expanded with the *product* item below the Field level and the *Connected World* item above the Company level.
  Located on the field level are the physical *assets*, such as sensors and actuators. These *assets* are also frequently referred to as *edge devices*, as – from the perspective of the data stream – they are located at the edge of the *connected world*.



The standard automation pyramid

Fig. 1.2: Standard automation pyramid

Industry 4.0 components must be describable using the RAMI model. This means that a sensor (field device) must be able to exchange data across all levels of the RAMI model if it is to be used as a real Industry 4.0 component.

- Industry 4.0 demands a secure, uniform standard for the exchange of data across levels – from the lowest field level to the top company level.
- Through its platform independence, the OPC-UA communication standard satisfies the integrated security and the semantic data description of many of these requirements (see chapter 1.4 "Communication standard OPC-UA"). The Reference Architecture Model Industry 4.0 (RAMI 4.0) therefore recommends OPC-UA as the only standard for the realization of the communication layer.

1.4 Communication standard OPC-UA

One of the most promising realizations of Industry 4.0 systems at present is the use of the OPC-UA protocol.

OPC-UA standard

- OPC stands for *Open Platform Communications*, UA stands for *Unified Architecture*.
- OPC is a set of standards for industrial communication. It was developed between 1994 and 1996 under the name *OKE for Process Control* to exchange process data of actuators and sensors from various manufacturers with SCADA and HMI systems. OPC is based on the Microsoft technologies OLE, COM and DCOM.
- OPC-UA is a significant further development of OPC which was initially made public in 2006 and since then has undergone continuous development.

  The big advance in the context of Industry 4.0 is that OPC-UA was realized as a cross-platform implementation and, as such, is no longer restricted to Windows platforms.
- OPC-UA is an operating system- and platform-independent cross-manufacturer interoperability standard for exchanging data and information between devices, machines and computer systems in industrial automation technology.

  With this and with the security mechanisms also integrated in the standard, OPC-UA is a technology for the direct and secure exchange across all levels of the automation pyramid, from the field and sensor level to the IT level and, thus, even to the company-wide systems for production planning or control as well as global cloud systems.
- OPC-UA can even be implemented in *embedded* systems, as are common in *edge devices*. Moreover, data based on the OPC-UA information model can be transferred using the OPC-UA protocols via all Ethernet-based fieldbus interfaces such as PROFINET or EtherCAT.

Integrated security

OPC-UA includes integrated security mechanisms for authentication, authorization, encryption and data integrity with signatures (see chapter 2.3 "Integrated security"). As a result, OPC-UA allows secure communication, which is not the case with the communication methods typically used in industrial environments.

OPC-UA communication

From the field level of the automation pyramid, OPC-UA can communicate with higher layers (e.g. the ERP layer) via two different mechanisms:

- Via a client/server communication

  With client/server communication, an OPC-UA server is integrated in the data source, e.g., a sensor that can deliver data to a data recipient.
- Via a publisher method

  With the publisher method, an OPC-UA publisher is integrated in the data source. This publisher can then make its data available to various data recipients.

  If there is more than one data source (sensor) in the system, the data recipient can decide which data from which publisher it is interested in. Thus, the recipient does not always need to accept the data from all publishers.

  Firstly, using the publisher, communication from *m* data sources to *n* data recipients is thereby possible. Moreover, a data cloud can retrieve interesting data directly from the data source.

Communication is also possible in the reverse direction (from the cloud to the *edge device*), e.g. to facilitate software uploads or configurations. As a result, OPC-UA can virtually "tunnel through" the layers of the automation pyramid and distribute data in the entire RAMI model.

Semantic description

In addition to the advantages with respect to the communication and the secure transport of data, another strength of OPC-UA is the possibility to semantically describe not only the pure data values but their meaning as well.

OPC-UA thereby enables a manufacturer-independent, machine-interpretable access to the data and is especially well suited for automated data exchange across all levels.

Data exchange

Thanks to the secure communication, the exchange of data between different systems via public channels is conceivable.

Industry 4.0 and IIoT stand for the exchange of data between capturing and operating units (sensors and actuators) across all system borders. Thus, OPC-UA is an essential part of Industry 4.0. With the properties mentioned above, OPC-UA is one of the most important candidates for a future standard in machine-to-machine communication (M2M).

In cooperation with a manufacturer of *edge devices*, Leuze electronic has shown that the complete technical implementation of the possibilities afforded by OPC-UA is already possible. With the BCL 348i, Leuze electronic has presented a sensor that transports complex data directly to the cloud parallel to a fieldbus interface for process data and a web server for diagnostic data. In the cloud, data can be analyzed and distributed for the purpose of visualizing it, e.g. on a mobile device.

The reverse is possible as well: one can address a BCL 348i from anywhere in the world, e.g. from a mobile device via the cloud.

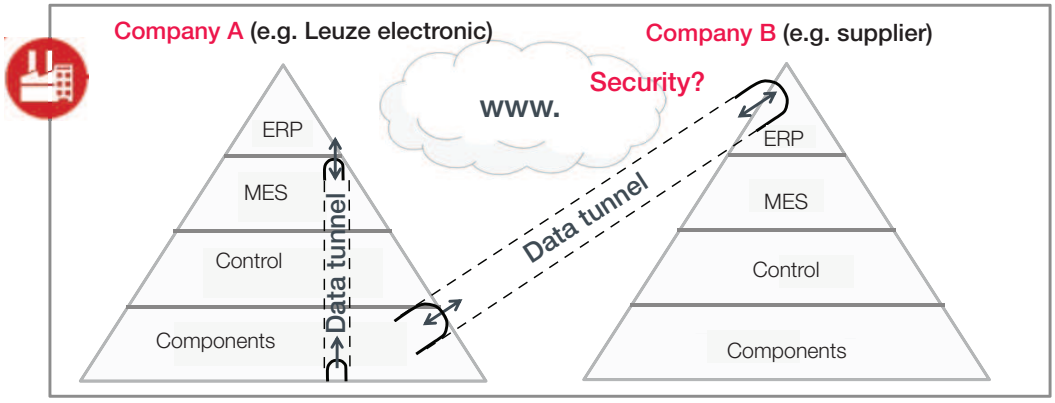


Fig. 1.3: Data transfer without OPC-UA

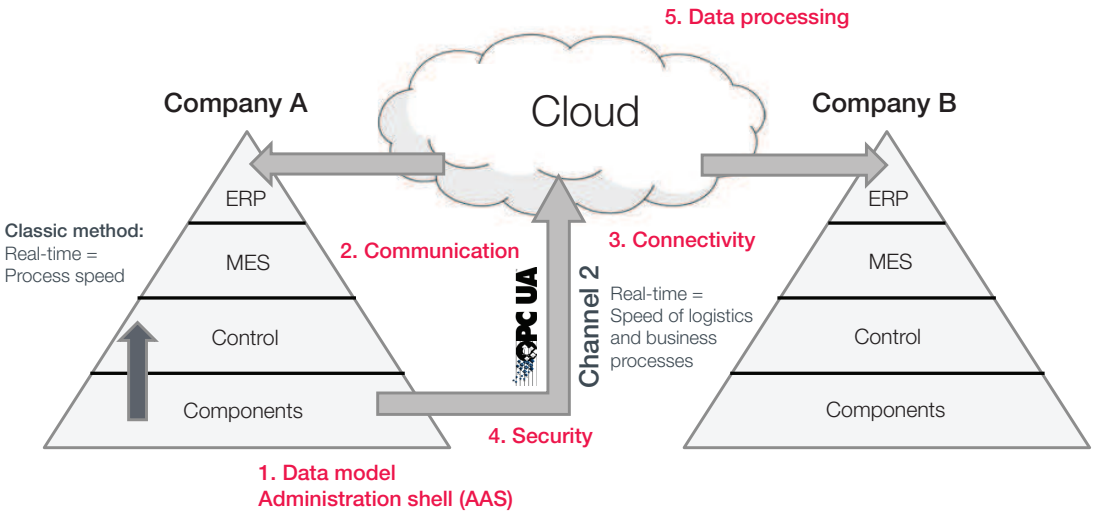


Fig. 1.4: Data transfer with OPC-UA

2 Fundamentals

2.1 OPC Foundation

The OPC Foundation (**https://opcfoundation.org**) is a globally organized industrial consortium which creates and administers the OPC-UA specifications as a nonprofit organization (see chapter 2.2 "Specification").

The certification program of the OPC Foundation enables the inspection for correct and specification-compliant behavior of the OPC-UA products, thereby ensuring that OPC-UA products meet the standard see chapter 2.1.2 "Certification").

As a corporate member, Leuze electronic is a voting member of the OPC Foundation and represented in various working groups.

2.1.1 Companion Standards

The OPC Foundation works closely with other industry associations. Together with information models (companion standards) created with these organizations, industry-specific standards are mapped to OPC-UA.

The realization of such a standard enables fast integration of devices from various manufacturers in an application.

One example of such a companion standard is the *OPC-UA for AutoID* specification, which was created in a working group of the OPC Foundation with the AIM-D e.V. as a standard for Ident devices such as RFID or bar code readers.

Leuze electronic realized the AutoID standard in a basic implementation for the BCL 300i bar code reader and the camera-based DCR 200i code reader.

2.1.2 Certification

The certification program of the OPC Foundation ensures that OPC products meet the standard. The test software (Compliance Test Tool *CTT*) made available to the members of the OPC Foundation can be used by the manufacturers for their own tests to verify that their products behave correctly and in compliance with the specification.

The same software is also used in the independent certification laboratories for the certification of the OPC-UA products according to a defined procedure. In addition to the standard-compliant behavior with the CTT, the certification laboratories also examine the interoperability with other products under real operating conditions as well as the behavior in error scenarios.

OPC-UA products which have successfully passed the certification test in a recognized certification laboratory receive the trademarked certification logo of the OPC Foundation as verification.

2.2 Specification

The OPC-UA standard is not a single specification but rather a series of parts that build upon one another. The individual parts define the standards for architecture and structure, security, information model, communication, data access, etc. (**OPC Unified Architecture Specification**).

The parts of the specification can be roughly divided into the following categories:

- Base or core specification (Core Specification)
- Access models (Access Type Specification)
- Service functions (Utility Type Specification)

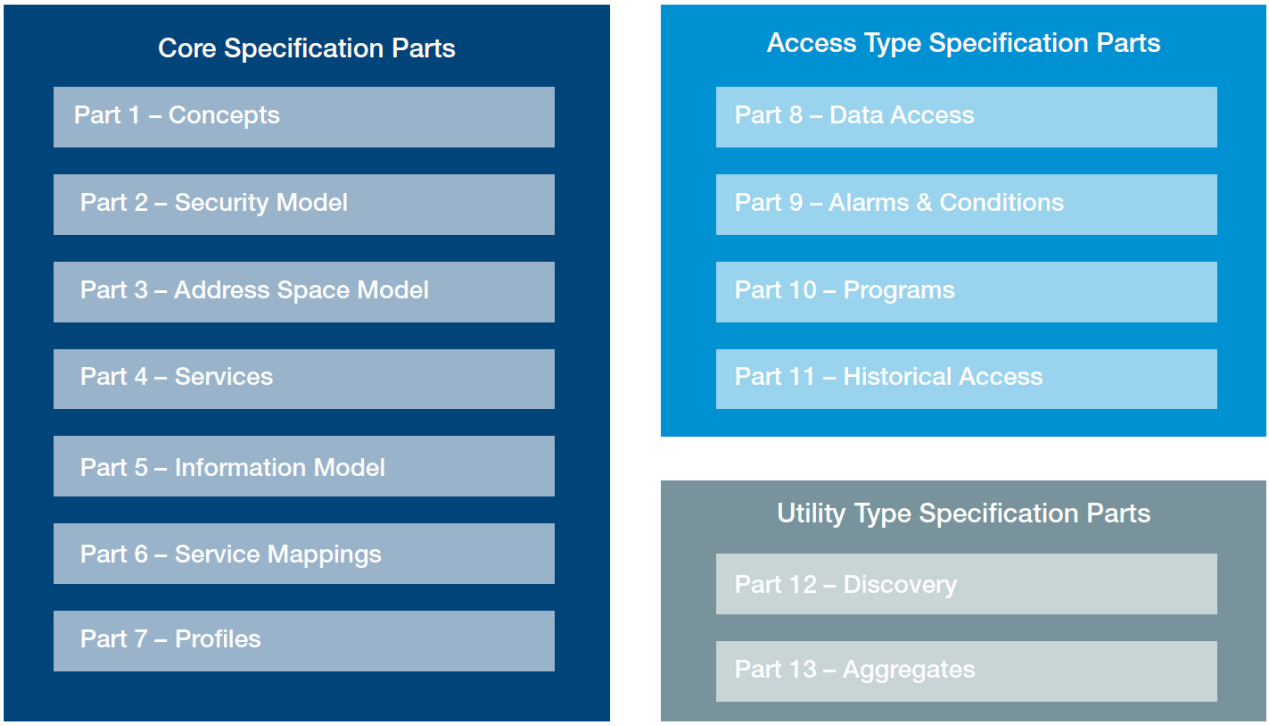


Fig. 2.1: Categories of the OPC-UA specification [image source: OPC Foundation]

IEC standard

With its individual parts, the OPC-UA specification is standardized by the IEC as standard series IEC 62541.

2.3 Integrated security

The OPC-UA specification includes integrated security mechanisms such as authorization, authentication, encryption and data integrity with signatures.

In a security analysis performed by the German Federal Office for Information Technology Security (BSI) and TÜV SÜD Rail in 2015, it was confirmed that the OPC-UA specification was developed taking into account security aspects as a central element and contains no systematic security threats.

	NOTICE
	This does not mean that an OPC-UA application can always be classified as secure. The security of a product is dependent on the respective implementation. In a security analysis published in May 2018, a total of 17 zero-day security threats were exposed in various OPC-UA implementations – including several in the sample server of the OPC Foundation

2.4 Scalability

OPC-UA can be used in sensors as well as in embedded systems, in controls, in PC systems and smartphones and in servers on which MES or ERP applications run.

3 Terms

3.1 Address space

Address space refers to the collection of all information that an OPC-UA server makes available to the clients.

The information model that is mapped therein is not a hierarchically structured tree consisting of folders, items and properties, but rather a full mesh network comprising nodes and references.

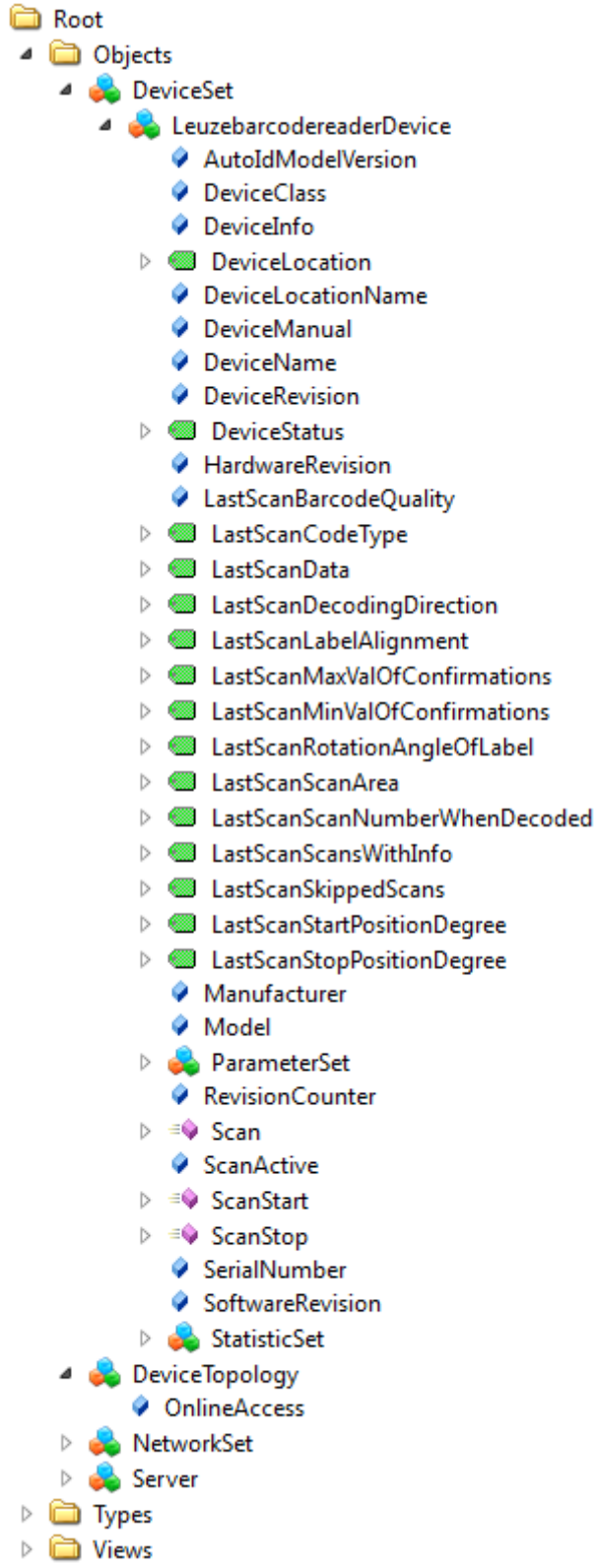


Fig. 3.1: OPC-UA address space using a Leuze bar code reader as an example

3.1.1 Nodes

An entity in the address space of an OPC-UA server is referred to as a node. Depending on their meaning, these are divided into the classes: Variable, Object, Method, View, DataType, VariableType, ObjectType or ReferenceType.

Variable

Variables are used to represent values. A distinction is made here between DataVariables and Properties. Properties stand for the property of an entity (node) while DataVariables represent concrete data values.

Object

Objects represent complex data types. On the one hand, these can be used to represent a real component. On the other hand, other objects or variables can also thereby be logically grouped to realize a container or folder structure for the data.

Method

Methods represent functions of an OPC-UA server that can be called by a client.

View

A view is a subset of all nodes in the address space of a server. Large address spaces can thereby be divided into sub-areas that are, e.g., only of interest for certain clients. For example, an address space can be structured for different application cases through views. Various users can thereby be given different views to the data depending on their respective user role.

Type Definitions

The *DataType*, *VariableType*, *ObjectType* and *ReferenceType* nodes define other types of entities in the address space of an OPC-UA server.

3.1.2 NodeID

The unique addressing of a node in the OPC-UA address space is performed via its NodeID (Node Identifier). Such a NodeID consists of the actual identifier and the namespace index (see chapter 3.1.3 "Namespace").

The type of identifier of a NodeID can be a numerical value, a string, a GUID (Global Unique Identifier) or a transparent value (namespace-specific binary string).

The OPC-UA server implementation of the Leuze devices currently only supports the numerical identifier type. At the same time, this is also the type that requires the least amount of memory and bandwidth and is therefore best suited for implementations in embedded and time-critical systems.

3.1.3 Namespace

Namespaces are used to avoid name conflicts within an OPC-UA address space. Within an OPC-UA server, the namespaces contained in the address space are consecutively numbered with an index.

Value	String Array[5]
[0]	http://opcfoundation.org/UA/
[1]	urn:LeuzeElectronic:BCL3xx:Example
[2]	http://opcfoundation.org/UA/DI/
[3]	http://opcfoundation.org/UA/AutoID/
[4]	http://leuze.com/LeuzeBarcodeReader/

Fig. 3.2: Namespaces of an OPC-UA server using a Leuze bar code reader as an example

NOTICE

The OPC Foundation has defined a series of nodes that provide information about the respective OPC-UA server and grouped them together in a namespace. This base namespace always has namespace index *0*.

3.2 Profile

A profile is the formal description of the grouping of parts of the functionalities described in the OPC-UA specifications. A profile consists of Conformance Units and can itself contain other profiles. A Conformance Unit in turn is a grouping of individual functions that form a verifiable unit.

3.3 Endpoints

All information required for establishing a connection is published by a server in the so-called endpoint:

- A server must publish at least one endpoint to allow a client to establish a connection.
- An endpoint consists of the URL and the security policy.
- The OPC-UA specification defines the discovery process (see chapter 3.4 "Discovery") to enable a client to discover the endpoints of a server.

The following security policies are supported by the Leuze electronic server implementations:

- None: unprotected data transfer.
- Sign: digital signature, protection of the data integrity
- Sign & Encrypt: digital signature and encryption, protection of the data integrity and confidentiality

When establishing a connection, a client should select the server endpoint that offers the highest security level that it supports.

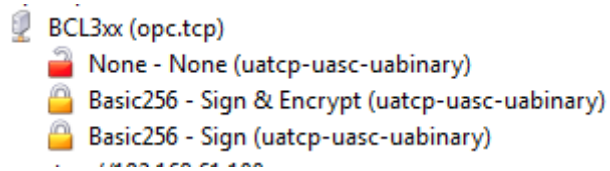


Fig. 3.3: OPC-UA endpoints using a Leuze bar code reader as an example

3.4 Discovery

The OPC-UA Discovery Service Set defines services that allow OPC-UA clients to ascertain the endpoints provided by a server and to obtain their security settings.

The Discovery services are implemented by individual OPC-UA servers or by dedicated Discovery servers.

3.4.1 Local Discovery Service

Each server must have a local Discovery endpoint (*Local Discovery Service – LDS*) which the clients can access without establishing a session. By means of this endpoint, clients obtain all information that is necessary for establishing a *SecureChannel* connection with the server.

The OPC-UA servers implemented by Leuze electronic make this LDS service available on standard port 4840.

3.4.2 Global Discovery Service

OPC-UA servers can register with the globally known Discovery servers (*Global Discovery Server – GDS*). Clients, on the other hand, can use such a GDS to ascertain the previously registered servers and thereby obtain from a central location the information necessary for establishing a connection with all registered servers.

3.5 Subscription

Unlike the permanent, active reading of information (polling principle), OPC-UA offers the clients with the subscriptions an elegant possibility to retrieve data from servers.

- A client can register for the nodes of a server that are of interest to it (*Monitored Items*). The server then monitors these *Monitored Items* within a session.
- Should a value change or a monitored event occur, the server generates a message for the client in the form of a *Notification Message*. The subscription publishes these *Notification Message* cyclically in a previously defined interval.
- The subscription mechanism reduces the data quantity to be transferred, thereby saving bandwidth in the communication.

4 BCL 300

4.1 BCL 300 OPC-UA namespaces

The following table shows the namespaces made available by the BCL 300 OPC-UA server with their respective URLs and the corresponding indices.

Namespace index	Namespace URL	Description
[0]	http://opcfoundation.org/UA/	OPC-UA basic namespace
[1]	http://opcfoundation.org/UA/DI/	OPC-UA device integration
[2]	http://opcfoundation.org/UA/AutoID/	OPC-UA for AutoID
[3]	http://leuze.com/OpcUa/	Leuze basic namespace
[4]	http://leuze.com/OpcUa/BCL300/	Leuze BCL 300 namespace

The individual namespaces build upon one another hierarchically beginning with *NS0*.

4.2 BCL 300 OPC-UA address space

UAVARIABLE	DeviceManual			**NODEID**	ns=4;i=6067
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	DeviceManual	
DATATYPE	String				
DESCRIPTION	Address (pathname in the file system or a URL | web address) of user manual for the device				

UAVARIABLE	DeviceRevision			**NODEID**	ns=4;i=6068
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	DeviceRevision	
DATATYPE	String				
DESCRIPTION	Overall revision level of the device				

UAVARIABLE	HardwareRevision			**NODEID**	ns=4;i=6069
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	HardwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the hardware of the device				

UAVARIABLE	Manufacturer			**NODEID**	ns=4;i=6070
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	Manufacturer	
DATATYPE	LocalizedText				
DESCRIPTION	Model name of the device				

UAVARIABLE	Model			**NODEID**	ns=4;i=6071
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	Model	
DATATYPE	LocalizedText				
DESCRIPTION	Name of the company that manufactured the device				

UAVARIABLE	RevisionCounter			**NODEID**	ns=4;i=6072
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	RevisionCounter	
DATATYPE	Int32				
DESCRIPTION	An incremental counter indicating the number of times the static data within the device has been modified				

UAVARIABLE	SerialNumber			**NODEID**	ns=4;i=6073
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	SerialNumber	
DATATYPE	String				
DESCRIPTION	Identifier that uniquely identifies, within a manufacturer, a device instance				

UAVARIABLE	SoftwareRevision			**NODEID**	ns=4;i=6074
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	SoftwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the software/firmware of the device				

4.2.1 AutoID

UAOBJECT	AutoID			**NODEID**	ns=4;i=5001
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	4	**name**	AutoID	
DATATYPE	BCL300AutoIdDeviceType				
DESCRIPTION					

UAVARIABLE	AutoIdModelVersion			**NODEID**	ns=4;i=6001
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	AutoIdModelVersion	
DATATYPE	String				
DESCRIPTION					

UAVARIABLE	DeviceClass			**NODEID**	ns=4;i=6204
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	DeviceClass	
DATATYPE	String				
DESCRIPTION	Indicates in which domain or for what purpose a device is used.				

UAVARIABLE	DeviceInfo			**NODEID**	ns=4;i=6002
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	DeviceInfo	
DATATYPE	String				
DESCRIPTION	Device status information				

UAVARIABLE	DeviceLocation			**NODEID**	ns=4;i=6076
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	DeviceLocation	
DATATYPE	Location				
DESCRIPTION	Union of GPS, UTM, Local				

UAVARIABLE	DeviceLocationName			**NODEID**	ns=4;i=6199
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	DeviceLocationName	
DATATYPE	String				
DESCRIPTION	Symbolic name of the device location				

UAVARIABLE	DeviceManual			**NODEID**	ns=4;i=6003
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	DeviceManual	
DATATYPE	String				
DESCRIPTION	Address (pathname in the file system or a URL | web address) of user manual for the device				

UAVARIABLE	DeviceName			**NODEID**	ns=4;i=6004
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	DeviceName	
DATATYPE	String				
DESCRIPTION	Default could be also host name, IP address, or MAC. This should be a field that can be configured for a device.				

UAVARIABLE	DeviceRevision			**NODEID**	ns=4;i=6005
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	DeviceRevision	
DATATYPE	String				
DESCRIPTION	Overall revision level of the device				

UAVARIABLE	DeviceStatus			**NODEID**	ns=4;i=6006
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	DeviceStatus	
DATATYPE	DeviceStatusEnumeration				
DESCRIPTION					

UAVARIABLE	HardwareRevision			**NODEID**	ns=4;i=6007
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	HardwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the hardware of the device				

UAVARIABLE	LastScanBarcodeQuality			**NODEID**	ns=4;i=6162
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	4	**name**	LastScanBarcodeQuality	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	LastScanCodeType			**NODEID**	ns=4;i=6165
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	4	**name**	LastScanCodeType	
DATATYPE	String				
DESCRIPTION					

UAVARIABLE	LastScanData			**NODEID**	ns=4;i=6205
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	LastScanData	
DATATYPE	String				
DESCRIPTION					

UAVARIABLE	LastScanDecodingDirection			**NODEID**	ns=4;i=6168
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	4	**name**	LastScanDecodingDirection	
DATATYPE	Boolean				
DESCRIPTION					

UAVARIABLE	LastScanLabelAlignment			**NODEID**	ns=4;i=6171
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	4	**name**	LastScanLabelAlignment	
DATATYPE	Int32				
DESCRIPTION					

UAVARIABLE	LastScanMaxValOfConfirmations			**NODEID**	ns=4;i=6174
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	4	**name**	LastScanMaxValOfConfirmations	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	LastScanMinValOfConfirmations			**NODEID**	ns=4;i=6177
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	4	**name**	LastScanMinValOfConfirmations	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	LastScanNumberWhenDecoded		**NODEID**	ns=4;i=6182
NAMESPACE	http://leuze.com/OpcUa/BCL300/			
BROWSENAME	**nsIdx**	4	**name**	LastScanNumberWhenDecoded
DATATYPE	UInt32			
DESCRIPTION				

UAVARIABLE	LastScanRotationAngleOfLabel		**NODEID**	ns=4;i=6183
NAMESPACE	http://leuze.com/OpcUa/BCL300/			
BROWSENAME	**nsIdx**	4	**name**	LastScanRotationAngleOfLabel
DATATYPE	Int32			
DESCRIPTION				

UAVARIABLE	LastScanScanArea		**NODEID**	ns=4;i=6186
NAMESPACE	http://leuze.com/OpcUa/BCL300/			
BROWSENAME	**nsIdx**	4	**name**	LastScanScanArea
DATATYPE	UInt32			
DESCRIPTION				

UAVARIABLE	LastScanScansWithInfo		**NODEID**	ns=4;i=6191
NAMESPACE	http://leuze.com/OpcUa/BCL300/			
BROWSENAME	**nsIdx**	4	**name**	LastScanScansWithInfo
DATATYPE	UInt32			
DESCRIPTION				

UAVARIABLE	LastScanSkippedScans		**NODEID**	ns=4;i=6192
NAMESPACE	http://leuze.com/OpcUa/BCL300/			
BROWSENAME	**nsIdx**	4	**name**	LastScanSkippedScans
DATATYPE	UInt32			
DESCRIPTION				

UAVARIABLE	LastScanStartPositionDegree		**NODEID**	ns=4;i=6195
NAMESPACE	http://leuze.com/OpcUa/BCL300/			
BROWSENAME	**nsIdx**	4	**name**	LastScanStartPositionDegree
DATATYPE	Float			
DESCRIPTION				

UAVARIABLE	LastScanStopPositionDegree		**NODEID**	ns=4;i=6198
NAMESPACE	http://leuze.com/OpcUa/BCL300/			
BROWSENAME	**nsIdx**	4	**name**	LastScanStopPositionDegree
DATATYPE	Float			
DESCRIPTION				

UAVARIABLE	Manufacturer			**NODEID**	ns=4;i=6008
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	Manufacturer	
DATATYPE	LocalizedText				
DESCRIPTION	Model name of the device				

UAVARIABLE	Model			**NODEID**	ns=4;i=6009
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	Model	
DATATYPE	LocalizedText				
DESCRIPTION	Name of the company that manufactured the device				

UAVARIABLE	RevisionCounter			**NODEID**	ns=4;i=6024
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	RevisionCounter	
DATATYPE	Int32				
DESCRIPTION	An incremental counter indicating the number of times the static data within the device has been modified				

UAMETHOD	Scan			**NODEID**	ns=4;i=7016
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	Scan	
DESCRIPTION					
ARGUMENTLIST					
INPUTARGUMENTS	Datatype	ScanSettings			
	Name	Settings			
	Array				
	ValueRank	Scalar (−1)			
	Description				
OUTPUTARGUMENTS	Datatype	OpticalScanResult			
	Name	Results			
	Array				
	ValueRank	OneDimension (1)			
	Description				
	Datatype	AutoIdOperationStatusEnumeration			
	Name	Status			
	Array				
	ValueRank	Scalar (−1)			
	Description				

UAVARIABLE	ScanActive			**NODEID**	ns=4;i=6202
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	ScanActive	
DATATYPE	Boolean				
DESCRIPTION	A boolean flag to activate or deactivate the scanning process.				

UAMETHOD	ScanStart			**NODEID**	ns=4;i=7001
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	ScanStart	
DESCRIPTION					
ARGUMENTLIST					
INPUTARGUMENTS	Datatype	ScanSettings			
	Name	Settings			
	Array				
	ValueRank	Scalar (−1)			
	Description				
OUTPUTARGUMENTS	Datatype	AutoIdOperationStatusEnumeration			
	Name	Status			
	Array				
	ValueRank	Scalar (−1)			
	Description				

UAMETHOD	ScanStop			**NODEID**	ns=4;i=7002
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	2	**name**	ScanStop	
DESCRIPTION					
ARGUMENTLIST					

UAVARIABLE	SerialNumber			**NODEID**	ns=4;i=6025
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	SerialNumber	
DATATYPE	String				
DESCRIPTION	Identifier that uniquely identifies, within a manufacturer, a device instance				

UAVARIABLE	SoftwareRevision			**NODEID**	ns=4;i=6026
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	SoftwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the software/firmware of the device				

ParameterSet

UAOBJECT	ParameterSet			**NODEID**	ns=4;i=5005
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	ParameterSet	
DATATYPE	BaseObjectType				
DESCRIPTION	Flat list of Parameters				

UAVARIABLE	<ParameterIdentifier>			**NODEID**	ns=4;i=6023
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	ParameterIdentifier	
DATATYPE	BaseDataVariableType				
DESCRIPTION	A parameter which belongs to the topology element.				

4.2.2 FunctionalUnits

UAOBJECT	FunctionalUnits			**NODEID**	ns=4;i=5015
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	FunctionalUnits	
DATATYPE	LeuzeFunctionalUnitsContainerType				
DESCRIPTION					

AdjustmentMode

UAOBJECT	AdjustmentMode			**NODEID**	ns=4;i=5016
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	AdjustmentMode	
DATATYPE	AdjustmentMode				
DESCRIPTION	This object is used to show reading quality and/or configure the laser position to get the best reading quality.				

UAVARIABLE	BarcodeInfo			**NODEID**	ns=4;i=6083
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeInfo	
DATATYPE	String				
DESCRIPTION	This variable is used to show the last scanned barcode label number.				

UAMETHOD	StartAdjustmentMode			**NODEID**	ns=4;i=7005
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	StartAdjustmentMode	
DESCRIPTION	This method is used to show reading quality and/or configure the laser position to get the best reading quality.				
ARGUMENTLIST					
INPUTARGUMENTS	Datatype	AdjustmentModeEnumeration			
	Name	Status			
	Array				
	ValueRank	Scalar (−1)			
	Description				
	Datatype	Int16			
	Name	MirrorPosition			
	Array				
	ValueRank	Scalar (−1)			
	Description				

UAVARIABLE	ValidScans			**NODEID**	ns=4;i=6085
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	ValidScans	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the reading quality in per mill of the last 100 valid scans.				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20056			
	Unit	part per thousand [‰]			
	Description				
EURANGE	TypeId	i=885			
	Low	0			
	High	1000			
	Description				

AutoConfig

UAOBJECT	AutoConfig			**NODEID**	ns=4;i=5019
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	AutoConfig	
DATATYPE	AutoConfig				
DESCRIPTION	This object is used to perform requested operation for automatic configuration. For example, reading one or more barcodes and store them in tables.				

AutoCodeDetection

UAOBJECT	AutoCodeDetection			**NODEID**	ns=4;i=5020
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	AutoCodeDetection	
DATATYPE	BaseObjectType				
DESCRIPTION	This object is used to handle the start recognition of the code automatically.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6086
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Double				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	BarcodeInfo			**NODEID**	ns=4;i=6087
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeInfo	
DATATYPE	Double				
DESCRIPTION	This variable is used to show the last scanned barcode label number.				

UAVARIABLE	Code type			**NODEID**	ns=4;i=6088
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Code type	
DATATYPE	Double				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				

UAMETHOD	StartAutoCodeDetection			**NODEID**	ns=4;i=7006
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	StartAutoCodeDetection	
DESCRIPTION	This method is used to start recognition of the code automatically.				
ARGUMENTLIST					
INPUTARGUMENTS	Datatype	AutoCodeDetectionEnumeration			
	Name	Status			
	Array				
	ValueRank	Scalar (−1)			
	Description				
OUTPUTARGUMENTS	Datatype	ReturnErrorCodeEnumeration			
	Name	ReturnErrorCode			
	Array				
	ValueRank	Scalar (−1)			
	Description				

CodeTableConfiguration

UAOBJECT	CodeTableConfiguration			**NODEID**	ns=4;i=5021
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeTableConfiguration	
DATATYPE	BaseObjectType				
DESCRIPTION	This object is used to handle configuration of code tables automatically.				

UAMETHOD	StartCodeTableConfiguration		**NODEID**	ns=4;i=7007
NAMESPACE	http://leuze.com/OpcUa/BCL300/			
BROWSENAME	**nsIdx**	3	**name**	StartCodeTableConfiguration
DESCRIPTION	This method is used to start configuration of code tables automatically.			
ARGUMENTLIST				
INPUTARGUMENTS	Datatype	CodeTableConfigurationEnumeration		
	Name	Status		
	Array			
	ValueRank	Scalar (−1)		
	Description			
OUTPUTARGUMENTS	Datatype	ReturnErrorCodeEnumeration		
	Name	ReturnErrorCode		
	Array			
	ValueRank	Scalar (−1)		
	Description			

LeuzeCodeTableEntry1

UAOBJECT	LeuzeCodeTableEntry1			**NODEID**	ns=4;i=5022
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	LeuzeCodeTableEntry	
DATATYPE	LeuzeCodeTableEntryType				
DESCRIPTION	Table 1 of CodeTableConfiguration.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6091
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	CodeType			**NODEID**	ns=4;i=6092
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeType	
DATATYPE	String				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				

UAVARIABLE	IntervallMode			**NODEID**	ns=4;i=6093
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	IntervallMode	
DATATYPE	Boolean				
DESCRIPTION	When true, the first two barcodes set the range of readable barcodes.				

LeuzeCodeTableEntry2

UAOBJECT	LeuzeCodeTableEntry2			**NODEID**	ns=4;i=5023
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	LeuzeCodeTableEntry	
DATATYPE	LeuzeCodeTableEntryType				
DESCRIPTION	Table 2 of CodeTableConfiguration.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6094
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	CodeType			**NODEID**	ns=4;i=6095
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeType	
DATATYPE	String				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				
UAVARIABLE	IntervallMode			**NODEID**	ns=4;i=6096
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	IntervallMode	
DATATYPE	Boolean				
DESCRIPTION	When true, the first two barcodes set the range of readable barcodes.				

LeuzeCodeTableEntry3

UAOBJECT	LeuzeCodeTableEntry3			**NODEID**	ns=4;i=5024
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	LeuzeCodeTableEntry	
DATATYPE	LeuzeCodeTableEntryType				
DESCRIPTION	Table 3 of CodeTableConfiguration.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6097
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	CodeType			**NODEID**	ns=4;i=6098
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeType	
DATATYPE	String				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				

UAVARIABLE	IntervallMode			**NODEID**	ns=4;i=6099
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	IntervallMode	
DATATYPE	Boolean				
DESCRIPTION	When true, first two Barcodes set range of readable Barcodes.				

LeuzeCodeTableEntry4

UAOBJECT	LeuzeCodeTableEntry4			**NODEID**	ns=4;i=5025
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	LeuzeCodeTableEntry	
DATATYPE	LeuzeCodeTableEntryType				
DESCRIPTION	Table 4 of CodeTableConfiguration.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6100
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	CodeType			**NODEID**	ns=4;i=6101
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeType	
DATATYPE	String				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				

UAVARIABLE	IntervallMode			**NODEID**	ns=4;i=6102
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	IntervallMode	
DATATYPE	Boolean				
DESCRIPTION	When true, the first two barcodes set the range of readable barcodes.				

LeuzeCodeTableEntry5

UAOBJECT	LeuzeCodeTableEntry5			**NODEID**	ns=4;i=5026
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	LeuzeCodeTableEntry	
DATATYPE	LeuzeCodeTableEntryType				
DESCRIPTION	Table 5 of CodeTableConfiguration.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6103
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	CodeType			**NODEID**	ns=4;i=6104
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeType	
DATATYPE	String				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				

UAVARIABLE	IntervallMode			**NODEID**	ns=4;i=6105
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	IntervallMode	
DATATYPE	Boolean				
DESCRIPTION	When true, the first two barcodes set the range of readable barcodes.				

LeuzeCodeTableEntry6

UAOBJECT	LeuzeCodeTableEntry6			**NODEID**	ns=4;i=5027
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	LeuzeCodeTableEntry	
DATATYPE	LeuzeCodeTableEntryType				
DESCRIPTION	Table 6 of CodeTableConfiguration.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6106
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	CodeType			**NODEID**	ns=4;i=6107
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeType	
DATATYPE	String				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				

UAVARIABLE	IntervallMode			**NODEID**	ns=4;i=6108
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	IntervallMode	
DATATYPE	Boolean				
DESCRIPTION	When true, the first two barcodes set the range of readable barcodes.				

LeuzeCodeTableEntry7

UAOBJECT	LeuzeCodeTableEntry7			**NODEID**	ns=4;i=5028
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	LeuzeCodeTableEntry	
DATATYPE	LeuzeCodeTableEntryType				
DESCRIPTION	Table 7 of CodeTableConfiguration.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6109
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	CodeType			**NODEID**	ns=4;i=6110
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeType	
DATATYPE	String				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				

UAVARIABLE	IntervallMode			**NODEID**	ns=4;i=6111
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	IntervallMode	
DATATYPE	Boolean				
DESCRIPTION	When true, the first two barcodes set the range of readable barcodes.				

LeuzeCodeTableEntry8

UAOBJECT	LeuzeCodeTableEntry8			**NODEID**	ns=4;i=5029
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	LeuzeCodeTableEntry	
DATATYPE	LeuzeCodeTableEntryType				
DESCRIPTION	Table 8 of CodeTableConfiguration.				

UAVARIABLE	BarcodeDigits			**NODEID**	ns=4;i=6112
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	BarcodeDigits	
DATATYPE	Byte				
DESCRIPTION	This variable is used to show the number of barcode digits.				

UAVARIABLE	CodeType			**NODEID**	ns=4;i=6113
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CodeType	
DATATYPE	String				
DESCRIPTION	This variable is used to show the code type of the last read barcode.				

UAVARIABLE	IntervallMode			**NODEID**	ns=4;i=6114
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	IntervallMode	
DATATYPE	Boolean				
DESCRIPTION	When true, the first two barcodes set the range of readable barcodes.				

OperationMode

UAOBJECT	OperationMode			**NODEID**	ns=4;i=5032
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	OperationMode	
DATATYPE	OperationMode				
DESCRIPTION	This object is used to switch between operation modes.				

UAVARIABLE	CurrentMode			**NODEID**	ns=4;i=6117
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CurrentMode	
DATATYPE	GetOperationModeEnumeration				
DESCRIPTION	This variable is used to show current running operation mode.				

UAMETHOD	SetOpMode			**NODEID**	ns=4;i=7008
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	SetOpMode	
DESCRIPTION	This method is used to switch between operation modes.				
ARGUMENTLIST					
INPUTARGUMENTS	Datatype	OperationModeEnumeration			
	Name	Status			
	Array				
	ValueRank	Scalar (−1)			
	Description				

Reset

UAOBJECT	Reset			**NODEID**	ns=4;i=5035
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Reset	
DATATYPE	Reset				
DESCRIPTION	This object is used to reset the system.				

UAMETHOD	ResetDevice			**NODEID**	ns=4;i=7009
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	ResetDevice	
DESCRIPTION	This method is used to reset the system.				
ARGUMENTLIST					

4.2.3 ParameterSet

UAOBJECT	ParameterSet			**NODEID**	ns=4;i=5011
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	ParameterSet	
DATATYPE	BaseObjectType				
DESCRIPTION	Flat list of Parameters				

UAVARIABLE	ParameterIdentifier			**NODEID**	ns=4;i=6075
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	1	**name**	ParameterIdentifier	
DATATYPE	BaseDataVariableType				
DESCRIPTION	A parameter which belongs to the topology element.				

4.2.4 StatisticSet

UAOBJECT	StatisticSet			**NODEID**	ns=4;i=5006
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	StatisticSet	
DATATYPE	BaseObjectType				
DESCRIPTION					

UAVARIABLE	DeviceTemperature			**NODEID**	ns=4;i=6027
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	DeviceTemperature	
DATATYPE	Float				
DESCRIPTION					
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	4408652			
	Unit	degree Celsius [°C]			
	Description				

ReadingGate

UAOBJECT	ReadingGate			**NODEID**	ns=4;i=5008
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	ReadingGate	
DATATYPE	ReadingGateStatisticsType				
DESCRIPTION					

UAVARIABLE	CountSinceDelivery			**NODEID**	ns=4;i=6039
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CountSinceDelivery	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6042
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6043
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Portion			**NODEID**	ns=4;i=6044
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Portion	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	CountSinceReset			**NODEID**	ns=4;i=6040
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	CountSinceReset	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6045
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6046
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Portion			**NODEID**	ns=4;i=6047
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Portion	
DATATYPE	UInt32				
DESCRIPTION					

Duration

UAOBJECT	Duration			**NODEID**	ns=4;i=5010
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Duration	
DATATYPE	BaseObjectType				
DESCRIPTION					

UAVARIABLE	AverageSinceDelivery			**NODEID**	ns=4;i=6048
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	AverageSinceDelivery	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	AverageSinceReset			**NODEID**	ns=4;i=6049
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	AverageSinceReset	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	MaximumSinceDelivery			**NODEID**	ns=4;i=6050
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	MaximumSinceDelivery	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	MaximumSinceReset			**NODEID**	ns=4;i=6051
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	MaximumSinceReset	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	MinimumSinceDelivery			**NODEID**	ns=4;i=6052
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	MinimumSinceDelivery	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	MinimumSinceReset			**NODEID**	ns=4;i=6053
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	MinimumSinceReset	
DATATYPE	Int64				
DESCRIPTION					

ReferenceCode

UAOBJECT	ReferenceCode			**NODEID**	ns=4;i=5009
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	ReferenceCode	
DATATYPE	ReferenceCodeStatisticsType				
DESCRIPTION					

UAVARIABLE	Code1SinceDelivery			**NODEID**	ns=4;i=6054
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Code	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6060
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6061
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Portion			**NODEID**	ns=4;i=6062
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Portion	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	Code1SinceReset			**NODEID**	ns=4;i=6055
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Code	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6063
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6064
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Portion			**NODEID**	ns=4;i=6065
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Portion	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	Code2SinceDelivery			**NODEID**	ns=4;i=6056
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Code	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6066
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6079
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Portion			**NODEID**	ns=4;i=6080
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Portion	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	Code2SinceReset			NODEID	ns=4;i=6057
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	nsIdx	3	name	Code	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			NODEID	ns=4;i=6081
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	nsIdx	3	name	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			NODEID	ns=4;i=6082
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	nsIdx	3	name	Ok	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Portion			NODEID	ns=4;i=6210
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	nsIdx	3	name	Portion	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	TeachCountSinceDelivery			NODEID	ns=4;i=6058
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	nsIdx	3	name	TeachCountSinceDelivery	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	TeachCountSinceReset			NODEID	ns=4;i=6059
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	nsIdx	3	name	TeachCountSinceReset	
DATATYPE	Int64				
DESCRIPTION					

Runtime

UAOBJECT	Runtime			**NODEID**	ns=4;i=5007
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	Runtime	
DATATYPE	BaseObjectType				
DESCRIPTION					

UAVARIABLE	DeviceRuntimeSinceDelivery			**NODEID**	ns=4;i=6030
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	DeviceRuntimeSinceDelivery	
DATATYPE	Int64				
DESCRIPTION					
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	4403766			
	Unit	millisecond [ms]			
	Description				

UAVARIABLE	DeviceRuntimeSinceReset			**NODEID**	ns=4;i=6033
NAMESPACE	http://leuze.com/OpcUa/BCL300/				
BROWSENAME	**nsIdx**	3	**name**	DeviceRuntimeSinceReset	
DATATYPE	Int64				
DESCRIPTION					
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	4403766			
	Unit	millisecond [ms]			
	Description				

5 DCR 200

5.1 DCR 200 OPC-UA namespaces

The following table shows the namespaces made available by the DCR 200 OPC-UA server with their respective URLs and the corresponding indices.

Namespace Index	Namespace URL	Description
[0]	http://opcfoundation.org/UA/	OPC-UA basic namespace
[1]	http://opcfoundation.org/UA/DI/	OPC-UA device integration
[2]	http://opcfoundation.org/UA/AutoID/	OPC-UA for AutoID
[3]	http://leuze.com/OpcUa/	Leuze basic namespace
[4]	http://leuze.com/OpcUa/DCR200/	Leuze DCR 200 namespace

The individual namespaces build upon one another hierarchically beginning with *NS0*.

5.2 DCR 200 OPC-UA address space

UAVARIABLE	DeviceManual			**NODEID**	ns=4;i=6031
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	DeviceManual	
DATATYPE	String				
DESCRIPTION	Address (pathname in the file system or a URL | web address) of user manual for the device				

UAVARIABLE	DeviceRevision			**NODEID**	ns=4;i=6032
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	DeviceRevision	
DATATYPE	String				
DESCRIPTION	Overall revision level of the device				

UAVARIABLE	HardwareRevision			**NODEID**	ns=4;i=6033
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	HardwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the hardware of the device				

UAVARIABLE	Manufacturer			**NODEID**	ns=4;i=6034
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	Manufacturer	
DATATYPE	LocalizedText				
DESCRIPTION	Model name of the device				

UAVARIABLE	Model			**NODEID**	ns=4;i=6035
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	Model	
DATATYPE	LocalizedText				
DESCRIPTION	Name of the company that manufactured the device				

UAVARIABLE	RevisionCounter			**NODEID**	ns=4;i=6036
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	RevisionCounter	
DATATYPE	Int32				
DESCRIPTION	An incremental counter indicating the number of times the static data within the device has been modified				

UAVARIABLE	SerialNumber			**NODEID**	ns=4;i=6037
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	SerialNumber	
DATATYPE	String				
DESCRIPTION	Identifier that uniquely identifies, within a manufacturer, a device instance				

UAVARIABLE	SoftwareRevision			**NODEID**	ns=4;i=6038
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	SoftwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the software/firmware of the device				

5.2.1 AutoID

UAOBJECTt	AutoID			**NODEID**	ns=4;i=5003
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	AutoID	
DATATYPE	DCR200AutoIdDeviceType				
DESCRIPTION					

UAVARIABLE	AutoIdModelVersion			**NODEID**	ns=4;i=6016
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	2	**name**	AutoIdModelVersion	
DATATYPE	String				
DESCRIPTION					

UAVARIABLE	DeviceInfo			**NODEID**	ns=4;i=6017
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	2	**name**	DeviceInfo	
DATATYPE	String				
DESCRIPTION	Device status information				

UAVARIABLE	DeviceLocation			**NODEID**	ns=4;i=6121
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	2	**name**	DeviceLocation	
DATATYPE	Location				
DESCRIPTION	Union of GPS, UTM, Local				

UAVARIABLE	DeviceManual			**NODEID**	ns=4;i=6018
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	DeviceManual	
DATATYPE	String				
DESCRIPTION	Address (pathname in the file system or a URL | web address) of user manual for the device				

UAVARIABLE	DeviceName			**NODEID**	ns=4;i=6019
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	2	**name**	DeviceName	
DATATYPE	String				
DESCRIPTION	Default could be also host name, IP address, or MAC. This should be a field that can be configured for a device.				

UAVARIABLE	DeviceRevision			**NODEID**	ns=4;i=6020
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	DeviceRevision	
DATATYPE	String				
DESCRIPTION	Overall revision level of the device				

UAVARIABLE	DeviceStatus			**NODEID**	ns=4;i=6021
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	2	**name**	DeviceStatus	
DATATYPE	DeviceStatusEnumeration				
DESCRIPTION					

UAVARIABLE	HardwareRevision			**NODEID**	ns=4;i=6022
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	HardwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the hardware of the device				

UAVARIABLE	LastScanData			**NODEID**	ns=4;i=6122
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	2	**name**	LastScanData	
DATATYPE	BaseDataVariableType				
DESCRIPTION					

UAVARIABLE	Manufacturer			**NODEID**	ns=4;i=6023
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	Manufacturer	
DATATYPE	LocalizedText				
DESCRIPTION	Model name of the device				

UAVARIABLE	Model			**NODEID**	ns=4;i=6024
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	Model	
DATATYPE	LocalizedText				
DESCRIPTION	Name of the company that manufactured the device				

UAVARIABLE	RevisionCounter			**NODEID**	ns=4;i=6026
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	RevisionCounter	
DATATYPE	Int32				
DESCRIPTION	An incremental counter indicating the number of times the static data within the device has been modified				

UAMethod	ScanStart			**NODEID**	ns=4;i=7003
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	2	**name**	ScanStart	
DESCRIPTION					
ARGUMENTLIST					
INPUTARGUMENTS	Datatype	ScanSettings			
	Name	Settings			
	Array				
	ValueRank	Scalar (−1)			
	DESCRIPTION				
OUTPUTARGUMENTS	Datatype	AutoIdOperationStatusEnumeration			
	Name	Status			
	Array				
	ValueRank	Scalar (−1)			
	DESCRIPTION				

UAMETHOD	ScanStop			**NODEID**	ns=4;i=7004
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	2	**name**	ScanStop	
DESCRIPTION					
ARGUMENTLIST					

UAVARIABLE	SerialNumber			**NODEID**	ns=4;i=6029
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	SerialNumber	
DATATYPE	String				
DESCRIPTION	Identifier that uniquely identifies, within a manufacturer, a device instance				

UAVARIABLE	SoftwareRevision			**NODEID**	ns=4;i=6030
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	SoftwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the software/firmware of the device				

OpticalVerifierScanResult

UAOBJECT	OpticalVerifierScanResult			**NODEID**	ns=4;i=5014
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	OpticalVerifierScanResult	
DATATYPE	FolderType				
DESCRIPTION	Contains the results of a scan.				

UAVARIABLE	Decodability			**NODEID**	ns=4;i=6068
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	Decodability	
DATATYPE	Int16				
DESCRIPTION	The decodability value in percent.				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20529			
	Unit	percent [%]			
	DESCRIP-TION				
EURANGE	TypeId	i=885			
	Low	0			
	High	100			
	Description				

UAVARIABLE	Decode			**NODEID**	ns=4;i=6069
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	Decode	
DATATYPE	Int16				
DESCRIPTION	The decode content value in percent.				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20529			
	Unit	percent [%]			
	Description N				
EURANGE	TypeId	i=885			
	Low	0			
	High	100			
	Description				

UAVARIABLE	Defects			**NODEID**	ns=4;i=6070
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	Defects	
DATATYPE	Int16				
DESCRIPTION	The defects value in percent.				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20529			
	Unit	percent [%]			
	DESCRIP-TION				
EURANGE	TypeId	i=885			
	Low	0			
	High	100			
	Description				

UAVARIABLE	ECMin			**NODEID**	ns=4;i=6071
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	ECMin	
DATATYPE	Int16				
DESCRIPTION	The minimum Edge Contrast value in percent.				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20529			
	Unit	percent [%]			
	Description				
EURANGE	TypeId	i=885			
	Low	0			
	High	100			
	Description				

UAVARIABLE	IsoGrade			**NODEID**	ns=4;i=6072
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	IsoGrade	
DATATYPE	String				
DESCRIPTION	This value contains the ISO grade, the aperture and the wavelength used.				

UAVARIABLE	Modulation			**NODEID**	ns=4;i=6073
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	Modulation	
DATATYPE	Int16				
DESCRIPTION	The modulation (ECmin / SC) value in percent.				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20529			
	Unit	percent [%]			
	DESCRIP-TION				
EURANGE	TypeId	i=885			
	Low	0			
	High	100			
	Description				

UAVARIABLE	PrintGain			**NODEID**	ns=4;i=6074
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	PrintGain	
DATATYPE	Int16				
DESCRIPTION	The print gain value in percent.				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20529			
	Unit	percent [%]			
	Description				
EURANGE	TypeId	i=885			
	Low	-100			
	High	100			
	Description				

UAVARIABLE	RMin			**NODEID**	ns=4;i=6075
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	RMin	
DATATYPE	Int16				
DESCRIPTION	The minimum reflection value in percent (from a dark bar).				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20529			
	Unit	percent [%]			
	Description				
EURANGE	TypeId	i=885			
	Low	0			
	High	100			
	Description				

UAVARIABLE	SymbolContrast			**NODEID**	ns=4;i=6043
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	4	**name**	SymbolContrast	
DATATYPE	Int16				
DESCRIPTION	The Symbol Contrast value (Rmax - Rmin) in percent.				
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	20529			
	Unit	percent [%]			
	Description				
EURANGE	TypeId	i=885			
	Low	0			
	High	100			
	Description				

ParameterSet

UAOBJECT	ParameterSet			**NODEID**	ns=4;i=5005
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	ParameterSet	
DATATYPE	BaseObjectType				
DESCRIPTION	Flat list of Parameters				

UAVARIABLE	ParameterIdentifier			**NODEID**	ns=4;i=6025
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	1	**name**	ParameterIdentifier	
DATATYPE	BaseDataVariableType				
DESCRIPTION	A parameter which belongs to the topology element.				

5.2.2 ParameterSet

UAOBJECT	ParameterSet		**NODEID**	ns=4;i=5006
NAMESPACE	http://leuze.com/OpcUa/DCR200/			
BROWSENAME	**nsIdx**	1	**name**	ParameterSet
DATATYPE	BaseObjectType			
DESCRIPTION	Flat list of Parameters			

UAVARIABLE	ParameterIdentifier		**NODEID**	ns=4;i=6039
NAMESPACE	http://leuze.com/OpcUa/DCR200/			
BROWSENAME	**nsIdx**	1	**name**	ParameterIdentifier
DATATYPE	BaseDataVariableType			
DESCRIPTION	A parameter which belongs to the topology element.			

5.2.3 StatisticSet

UAOBJECT	StatisticSet			**NODEID**	ns=4;i=5012
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	StatisticSet	
DATATYPE	BaseObjectType				
DESCRIPTION					

UAVARIABLE	DeviceTemperature			**NODEID**	ns=4;i=6116
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	DeviceTemperature	
DATATYPE	Float				
DESCRIPTION					
ENGINEERINGUNITS	TypeId	i=888			
	URI	http://www.opcfoundation.org/UA/units/un/cefact			
	UnitId	4408652			
	Unit	degree Celsius [°C]			
	Description				

Readinggate

UAOBJECT	Readinggate			**NODEID**	ns=4;i=5008
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	Readinggate	
DATATYPE	ReadingGateStatisticsType				
DESCRIPTION					

UAVARIABLE	ReadinggatesSinceDelivery			**NODEID**	ns=4;i=6151
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	ReadinggatesSinceDelivery	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6152
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6153
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	ReadinggatesSinceReset			**NODEID**	ns=4;i=6050
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	ReadinggatesSinceReset	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6051
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6052
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

ReferenceCode

UAOBJECT	ReferenceCode			**NODEID**	ns=4;i=5010
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	ReferenceCode	
DATATYPE	ReferenceCodeStatisticsType				
DESCRIPTION					

UAVARIABLE	Code1SinceDelivery			**NODEID**	ns=4;i=6154
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	Code	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6155
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6156
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Code1SinceReset			**NODEID**	ns=4;i=6064
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	Code	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	NotOk			**NODEID**	ns=4;i=6065
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	NotOk	
DATATYPE	Int64				
DESCRIPTION					

UAVARIABLE	Ok			**NODEID**	ns=4;i=6066
NAMESPACE	http://leuze.com/OpcUa/DCR200/				
BROWSENAME	**nsIdx**	3	**name**	Ok	
DATATYPE	Int64				
DESCRIPTION					

6 IPS 200

6.1 IPS 200 OPC-UA namespaces

The following table shows the namespaces made available by the IPS 200 OPC-UA server with their respective URLs and the corresponding indices.

Namespace Index	Namespace URL	Description
[0]	http://opcfoundation.org/UA/	OPC-UA basic namespace
[1]	http://opcfoundation.org/UA/DI/	OPC-UA device integration
[2]	http://leuze.com/OpcUa/	Leuze basic namespace
[3]	http://leuze.com/OpcUa/IPS200/	Leuze IPS 200 namespace

The individual namespaces build upon one another hierarchically beginning with *NS0*.

6.2 IPS 200 OPC-UA address space

UAVARIABLE	DeviceManual			**NODEID**	ns=3;i=6031
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	DeviceManual	
DATATYPE	String				
DESCRIPTION	Address (pathname in the file system or a URL | web address) of user manual for the device				

UAVARIABLE	DeviceName			**NODEID**	ns=3;i=6019
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	DeviceName	
DATATYPE	String				
DESCRIPTION	Default could be also host name, IP address, or MAC. This should be a field that can be configured for a device.				

UAVARIABLE	DeviceRevision			**NODEID**	ns=3;i=6032
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	DeviceRevision	
DATATYPE	String				
DESCRIPTION	Overall revision level of the device				

UAVARIABLE	Diameter			**NODEID**	ns=3;i=53001
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	3	**name**	Diameter	
DATATYPE	Int32				
DESCRIPTION					

UAVARIABLE	HardwareRevision			**NODEID**	ns=3;i=6033
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	HardwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the hardware of the device				

UAVARIABLE	Hole Type			NODEID	ns=3;i=53005
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	3	**name**	Hole	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	Manufacturer			NODEID	ns=3;i=6034
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	Manufacturer	
DATATYPE	String				
DESCRIPTION	Name of the company that manufactured the device				

UAVARIABLE	Model			NODEID	ns=3;i=6035
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	Model	
DATATYPE	String				
DESCRIPTION	Model name of the device				

UAVARIABLE	Position X			NODEID	ns=3;i=53002
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	3	**name**	Position	
DATATYPE	Int32				
DESCRIPTION					

UAVARIABLE	Position_Y			NODEID	ns=3;i=53003
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	3	**name**	Position	
DATATYPE	Int32				
DESCRIPTION					

UAVARIABLE	Quality			NODEID	ns=3;i=53004
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	3	**name**	Quality	
DATATYPE	UInt32				
DESCRIPTION					

UAVARIABLE	RevisionCounter			NODEID	ns=3;i=6036
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	RevisionCounter	
DATATYPE	String				
DESCRIPTION	An incremental counter indicating the number of times the static data within the device has been modified				

UAVARIABLE	SerialNumber			**NODEID**	ns=3;i=6037
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	SerialNumber	
DATATYPE	String				
DESCRIPTION	Identifier that uniquely identifies, within a manufacturer, a device instance				

UAVARIABLE	SoftwareRevision			**NODEID**	ns=3;i=6038
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	1	**name**	SoftwareRevision	
DATATYPE	String				
DESCRIPTION	Revision level of the software/firmware of the device				

UAVARIABLE	Status			**NODEID**	ns=3;i=53000
NAMESPACE	http://leuze.com/OpcUa/IPS200/				
BROWSENAME	**nsIdx**	3	**name**	Status	
DATATYPE	UInt32				
DESCRIPTION					

Table of Figures