

IE-UGW- 2TX-xRS232/485

Application Note | Using the Industrial Gateway with Siemens S7-comm

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1. Warning and Disclaimer

Warning

Controls may fail in unsafe operating conditions, causing uncontrolled operation of the controlled devices. Such hazardous events can result in death and / or serious injury and / or property damage. Therefore, there must be safety equipment provided / electrical safety design or other redundant safety features that are independent from the automation system.

Disclaimer

This Application Note / Quick Start Guide / Example Program does not relieve you of the obligation to handle it safely during use, installation, operation and maintenance. Each user is responsible for the correct operation of his control system. By using this Application Note / Quick Start Guide / Example Program prepared by Weidmüller, you accept that Weidmüller cannot be held liable for any damage to property and / or personal injury that may occur because of the use.

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Security notes

In order to protect equipment, systems, machines and networks against cyber threats, it is necessary to implement (and maintain) a complete state-of-the-art industrial security concept. The customer is responsible for preventing unauthorized access to his equipment, systems, machines and networks. Systems, machines and components should only be connected to the corporate network or the Internet if necessary and appropriate safeguards (such as firewalls and network segmentation) have been taken.

2. Abstract

The Application Note describes how to access the Process Memory of an S7 processor using S7-comm over Ethernet.

3. Requirements

To understand the content of this document, basic programming knowledge with an S7 PLC using S7-comm protocol is required.

3.1. Hardware

Hardware	Order Number Weidmüller	Comments
IE-UGW-2TX-2RS232/485	7940124932	2 x Serial ports, 2 x Ethernet ports
IE-UGW-2TX-4RS232/485	7940124933	4 x Serial ports, 2 x Ethernet ports

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4. Accessing of Process Memory

When communicating with an S7 PLC using S7-comm over Ethernet, the Industrial Gateway can access Process Memory, using the operand identifier types of I, Q and M variables.

5. Reading Data Outside of Process Memory

Data that needs to be read outside of Process Memory, for instance data in a Global Data Block, Timer or Counter accumulator, needs to have that value moved to Process Memory first, so the Industrial Gateway can get access to that data.

6. Reading Data Outside of Process Memory

Data that needs to be written to a register outside of Process Memory, for instance writing data into an element of a Global Data Block, needs to have that value delivered to Process Memory first by the Industrial Gateway and then the data needs to be moved to the correct element of the Data Block.

7. Data Types Accessible within the Process Memory

The list of data types the Industrial Gateway can access in Process Memory is BOOL, INT, SINT, DINT & REAL. There are many data types an S7 processor can be configured for in Process Memory.

Memory Type		Description	Read/Write	Data Type
I	I	Input Memory	R/W	Bit
	IB			Byte
	IW			Word
	ID			Double Word
Q	Q	Output Memory	R/W	Bit
	QB			Byte
	QW			Word
	QD			Double Word
M	M	Internal Memory	R/W	Bit
	MB			Byte
	MW			Word
	MD			Double Word

The STRING data type is not available in an S7 PLC in Process Memory but CHAR is, so transferring a STRING using S7-comms needs to be done by breaking it up and sending it on a character-by-character basis, then reassembled at the delivery end.