

# SIEMENS

## SIMATIC

### S7-1200

## Update to the S7-1200 system manual, edition 11/2011

### Product Information

In spite of efforts to ensure the accuracy and clarity in the product documentation, some of the pages in the *S7-1200 Programmable Controller System Manual* contain information that has been identified as being incomplete, incorrect or misleading.

## Moving structures to an optimized data block (DB) is not supported

### WARNING

In STEP 7 V11 you could move structures from a standard or optimized data block (DB) to an optimized data block. STEP 7 V11 SP2 does not support moving structures to an optimized DB. Use of an optimized DB for the destination of a structure move may cause unexpected machine or process operation, which could result in death or serious personal injury.

You must change any previous STEP 7 V11 programs that move a structure to an optimized DB to move the structure to a standard DB:

1. Create a new standard DB.
2. Copy the contents of your previous optimized DB to the new standard DB.
3. Use the structure in the new standard DB as the destination of the MOVE instruction.

With standard DBs, STEP 7 V11 SP2 does support structure moves. All new programs must also use standard DBs for structure moves.

## Address packing for S7-1200 PLC distributed I/O not supported by STEP 7 V11 SP1 and SP2

You cannot use packed addresses for distributed I/O for an S7-1200 PLC with STEP 7 V11 SP1 or SP2. If you configure packed addresses, STEP 7 returns the error "Loading the hardware configuration failed (00200 0 2 0)" when you attempt to download the hardware configuration.

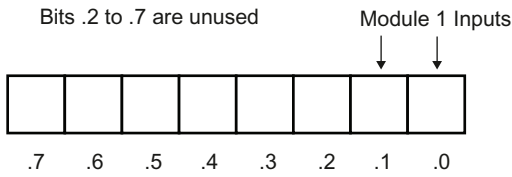
### Address packing of distributed I/O

The distributed I/O feature allows a PLC to use significant numbers of I/O that are located remotely from the CPU. Communications with the distributed I/O uses the PROFIBUS and PROFINET protocols. To make communications more efficient, the S7-1200 uses a feature called address packing. With this feature, I/O module addresses are "packed" into the smallest possible message to and from the PLC. For example, using ET 200S I/O, you can use many different low I/O count modules such as a 2DI digital input module or 2DO digital output module. Using standard (unpacked) addressing each DI or DO module uses an entire byte of message space to report the status of two points, essentially wasting six bits in each byte. The PLC would have a unique byte address for each module, I2.0 and I2.1 for digital inputs. The next digital input would be I3.0 and I3.1. If you use address packing, STEP 7 packs the addresses into one byte. The address for the first module would be I2.0 and I2.1, but the addresses for the second module would be I2.2 and I2.3, residing in the same address byte as the first module. This makes I/O communications more efficient if you are using many I/O modules.

The benefit also applies to the Process Image of the PLC. With unpacked addressing, the same addressing occurs, such that six bits are wasted for each 2DI or 2DO module. Packed addressing provides efficient usage of the Process Image.

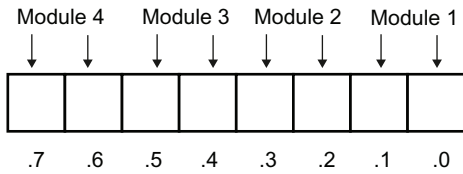
### Example: Unpacked Process Image byte

The following example shows one 2DI digital input module in an unpacked Process Image:



### Example: Packed Process Image byte

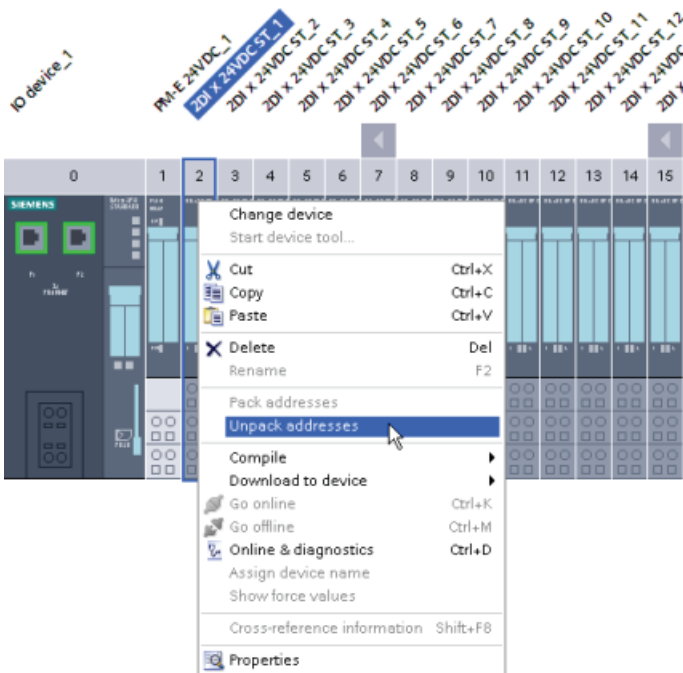
The following example shows four 2DI digital input modules in the same Process Image byte:



### Configuring unpacked addresses

You must configure unpacked addresses for distributed I/O for an S7-1200 PLC. To configure unpacked addresses, follow these steps:

1. Open the Device view for each Distributed I/O interface module that you configured.
2. Right-click each 2DI, 2DO, 4DI and 4DO module in your rack and select "Unpack addresses" from the context menu for modules that had been previously configured to be packed. By default, inserted modules use unpacked addressing.



When you have configured all of the distributed I/O modules for all of your interfaces to be unpacked, you can successfully download the hardware configuration.