

Overview of the valid data types

Validity of data type groups

The data type groups define the properties of the data, for example, the representation of the contents and the valid memory areas.

In the user program, you have the option of using pre-defined data types, which you add to the data types you have defined yourself. The following type categories are available for this:

- Elementary data types (binary numbers, integers, floating-point numbers, timers, DATE, TOD, LTOD CHAR, WCHAR)
- Complex data types (DT, LDT, DTL, STRING, WSTRING, ARRAY, STRUCT)
- User-defined data types (PLC data type (UDT))
- Pointer
- Parameter types
- System data types
- Hardware data types

The following tables show the availability of data types in the various S7-CPU:

Binary numbers

Binary numbers	S7-300/400	S7-1200	S7-1500
BOOL	X	X	X
Bit strings			
BYTE	X	X	X
WORD	X	X	X
DWORD	X	X	X
LWORD	-	-	X

Integers

Integers	S7-300/400	S7-1200	S7-1500
SINT	-	X	X
INT	X	X	X
DINT	X	X	X
USINT	-	X	X
UINT	-	X	X
UDINT	-	X	X
LINT	-	-	X

ULINT	-	-	X
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Floating-point numbers

Floating-point numbers	S7-300/400	S7-1200	S7-1500
REAL	X	X	X
LREAL	-	X	X

Timers

Timers	S7-300/400	S7-1200	S7-1500
S5TIME	X	-	X
TIME	X	X	X
LTIME	-	-	X

Date and time

Date and time	S7-300/400	S7-1200	S7-1500
DATE	X	X	X
TIME_OF_DAY (TOD)	X	X	X
LTOD (LTIME_OF_DAY)	-	-	X
DT (DATE_AND_TIME)	X	-	X
LDT	-	-	X
DTL	-	X	X

Character strings

Character strings	S7-300/400	S7-1200	S7-1500
CHAR	X	X	X
WCHAR	-	X	X
STRING	X	X	X
WSTRING	-	X	X

PLC data types (UDT)

PLC data types (UDT)	S7-300/400	S7-1200	S7-1500
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PLC data type (UDT)	X	X	X
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Anonymous structures

Anonymous structures	S7-300/400	S7-1200	S7-1500
STRUCT	X	X	X

ARRAY

ARRAY	S7-300/400	S7-1200	S7-1500
ARRAY [...] of <data type>	X	X	X

Pointer

Pointer	S7-300/400	S7-1200	S7-1500
References	-	-	X
VARIANT	-	X	X
POINTER	X	-	X
ANY	X	-	X

Parameter types

Parameter types	S7-300/400	S7-1200	S7-1500
TIMER	X	-	X
COUNTER	X	-	X
BLOCK_FC	X	-	X
BLOCK_FB	X	-	X
BLOCK_DB	X	-	-
BLOCK_SDB	X	-	-
VOID	X	X	X
PARAMETER	-	X	X

System data types

System data types	S7-300/400	S7-1200	S7-1500
IEC_TIMER	X ¹⁾	X	X

IEC_TIMER	-	-	X
IEC_SCOUNTER	-	X	X
IEC_USCOUNTER	-	X	X
IEC_COUNTER	X ²⁾	X	X
IEC_UCOUNTER	-	X	X
IEC_DCOUNTER	-	X	X
IEC_UDCOUNTER	-	X	X
IEC_LCOUNTER	-	-	X
IEC_ULCOUNTER	-	-	X
ERROR_STRUCT	-	X	X
NREF	-	X	X
CREF	-	X	X
VREF	-	X	X
SSL_HEADER	X	-	-
CONDITIONS	-	X	-
TADDR_Param	-	X	X
TCON_Param	-	X	X
HSC_Period	-	X	-
AssocValues	-	X	X
1) For S7-300/400 CPUs, the data type is represented by TP, TON and TOF.			
2) For S7-300/400 CPUs, the data type is represented by CTU, CTD and CTUD.			

Hardware data types

Hardware data types	S7-300/400	S7-1200	S7-1500
REMOTE	-	X	X
HW_ANY	-	X	X
HW_DEVICE	-	X	X
HW_DPMaster	-	-	X
HW_DPSlave	-	X	X
HW_IO	-	X	X
HW_IOSYSTEM	-	X	X
HW_SUBMODULE	-	X	X
HW_MODULE	-	-	X
HW_INTERFACE	-	X	X
HW_IEPORT	-	X	X
HW_HSC	-	X	X
HW_PWM	-	X	X
HW_PTO	-	X	X

<u>EVENT_ANY</u>	-	X	X
<u>EVENT_ATT</u>	-	X	X
<u>EVENT_HWINT</u>	-	X	X
<u>OB_ANY</u>	-	X	X
<u>OB_DELAY</u>	-	X	X
<u>OB_TOD</u>	-	X	X
<u>OB_CYCLIC</u>	-	X	X
<u>OB_ATT</u>	-	X	X
<u>OB_PCYCLE</u>	-	X	X
<u>OB_HWINT</u>	-	X	X
<u>OB_DIAG</u>	-	X	X
<u>OB_TIMEERROR</u>	-	X	X
<u>OB_STARTUP</u>	-	X	X
<u>PORT</u>	-	X	X
<u>RTM</u>	-	X	X
<u>PIP</u>	-	-	X
<u>CONN_ANY</u>	-	X	X
<u>CONN_PRG</u>	-	X	X
<u>CONN_OUC</u>	-	X	X
<u>CONN_R_ID</u>	-	-	X
<u>DB_ANY</u>	-	X	X
<u>DB_WWW</u>	-	X	X
<u>DB_DYN</u>	-	X	X

Note

Depending on the CPU version, the actually valid data types can deviate slightly from the table.