

The Misaligned Datatype error occurs when a variable is assigned to a hardware location such as %I or %Q, and the specified address is not in alignment with the starting address of the I/O driver.

For example, if the drivers starting address is %IB1000, data elements assigned in the memory area of the driver must have a remainder of zero when performing the following calculation:

$((\text{MyDataAddress} - \text{DriverHeadAddress}) \text{ MOD } \text{MyDataSize}) = \text{Remainder}$   
 Where MyDataSize is in bytes.

If an LREAL is assigned at %IL1017 the calculation shows that the value is misaligned.

**$((1017 - 1000) \text{ MOD } 8) = 0.125$  (Misaligned)**

If the LREAL data is moved to %IL1024, the the data is aligned:

**$((1024 - 1000) \text{ MOD } 8) = 0$  (Aligned)**

To see the head address of the driver, look at the I/O Group header in the Global Variables list, or look at the IO\_Configuration screen, which is populated by the Hardware Configuration.

**Global Variables List**

Name	Type	Usage	Description	Address
<b>System</b>				
Modbus FC#05 Qty: 128 Coils, Address Range: %IB24560 - %IB24575				
Modbus FC#02 Qty: 128 Inputs, Address Range: %QB24560 - %QB24575				
MyVar1	REAL	VAR_GLOBAL		%QD24560
MyVar2	REAL	VAR_GLOBAL		%QD24564
Modbus FC#04 Qty: 1024 Input Registers, Address Range: %QB28672 - %QB30719				
Modbus FC#06,16 Qty: 1024 Registers, Address Range: %IB28672 - %IB30719				
MyVar3	DINT	VAR_GLOBAL		
Modbus FC#03 Qty: 1024 Registers, Address Range: %QB24576 - %QB26623				
User Variables				

Elementary DataType Reference from MotionWorks IEC help system:

Data type	Description	Size	Range
BOOL	Boolean	1	0...1
SINT	Short integer	8	-128...127
INT	Integer	16	-32,768...32,767
DINT	Double integer	32	-2,147,483,648 up to 2,147,483,647
USINT	Unsigned short integer	8	0 up to 255
UINT	Unsigned integer	16	0 up to 65,535
UDINT	Unsigned double integer	32	0 up to 4,294,967,295
REAL	Real numbers	32	-3.402823466 E+38 (approx. 7 digits) up to -1.175494351 E-38 (approx. 7 digits) and +1.175494351 E-38 (approx. 7 digits) up to +3.402823466 E+38 (approx. 7 digits)  See the note below the table concerning REAL and LREAL processing.
LREAL	Long real numbers	64	~ -1.798 E+308 (approx. 15 digits) up to ~ -2.225 E-308 (approx. 15 digits) and ~ +2.225 E-308 (approx. 15 digits) up to ~ +1.798 E+308 (approx. 15 digits)  See the note below the table concerning REAL and LREAL processing.
TIME	Duration	32	0... 4,294,967,295 ms
BYTE	Bit string of length 8	8	0...255 (16#00...16#FF)
WORD	Bit string of length 16	16	0...65,535 (16#00...16#FFFF)
DWORD	Bit string of length 32	32	0...4,294,967,295 (16#00....16#FFFFFFFF)