

A typical EasyDMA channel is implemented in the following way.

```

READERBUFFER_SIZE 5
WRITERBUFFER_SIZE 6

uint8_t readerBuffer[READERBUFFER_SIZE] __at__ 0x20000000;
uint8_t writerBuffer[WRITERBUFFER_SIZE] __at__ 0x20000005;

// Configuring the READER channel
MYPERIPHERAL->READER.MAXCNT = READERBUFFER_SIZE;
MYPERIPHERAL->READER.PTR = &readerBuffer;

// Configure the WRITER channel
MYPERIPHERAL->WRITER.MAXCNT = WRITERBUFFER_SIZE;
MYPERIPHERAL->WRITER.PTR = &writerBuffer;

```

This example shows a peripheral called MYPERIPHERAL that implements two EasyDMA channels. One channel is for reading called READER, and one for writing called WRITER. When the peripheral starts, it performs the following tasks.

1. Reads 5 B from the readerBuffer located in RAM at address 0x20000000.
2. Processes the data.
3. Writes up to 6 B back to the writerBuffer located in RAM at address 0x20000005.

The memory layout of these buffers is illustrated in the following figure.

0x20000000	readerBuffer[0]	readerBuffer[1]	readerBuffer[2]	readerBuffer[3]
0x20000004	readerBuffer[4]	writerBuffer[0]	writerBuffer[1]	writerBuffer[2]
0x20000008	writerBuffer[3]	writerBuffer[4]	writerBuffer[5]	

Figure 6: EasyDMA memory layout

The specified size of the WRITER.MAXCNT register must not be larger than the actual size of the buffer (writerBuffer). This prevents the channel from overflowing the writerBuffer.

Once an EasyDMA transfer is complete, the CPU reads the AMOUNT register to see how many bytes were transferred. For example, the CPU can read the MYPERIPHERAL.WRITER.AMOUNT register to see how many bytes WRITER wrote to RAM.

Note: A READER or WRITER PTR register must point to a valid memory region before using EasyDMA. The reset value of a PTR register is not guaranteed to point to valid memory. See [Memory](#) on page 13 for more information about the memory regions and EasyDMA connectivity.

4.2.2.2 EasyDMA error handling

Errors can occur during DMA handling.

If READER.PTR or WRITER.PTR is not pointing to a valid memory region, an EasyDMA transfer could HardFault or cause RAM corruption. See [Memory](#) on page 13 for more information about the different memory regions.

An EasyDMA channel is an AHB bus Manager. If several AHB Managers try to access the same AHB Subordinate at the same time, AHB bus congestion can occur. Depending on the peripheral, the peripheral could either stall and wait for access to be granted, or lose data.