AN206373

F²MC/FR Family, All Series, Method of Confirming Data in Serial Communications

When MCU transmit/receive the data by the serial communications interface, there is a possibility of receiving wrong data by the noise. Therefore, this application note explains the method of confirming data by using the checksum. About the serial communications interface specification, please confirm the hardware manual of each MCU.

1 Introduction

When MCU transmit/receive the data by the serial communications interface, there is a possibility of receiving wrong data by the noise. Therefore, this application note explains the method of confirming data by using the checksum. About the serial communications interface specification, please confirm the hardware manual of each MCU.

2 Method of using checksum in serial communications

This chapter shows the method of calculating checksum by putting the 16 bit length data on some address. The example of C language program to calculate checksum is shown as follows.

```
unsigned short calc_checksum( unsigned short *addr, int size)
{
        unsigned long sum;
        unsigned long checksum;
        sum = 0;
        while( size > 1 ){
                sum+= *(addr++);
                size-= 2;
        }
        if( size > 0 ){
                sum+= (*addr) & 0xff00;     /* If byte data remains at the end, it is added */
        }
        sum = (sum & 0xffff) + (sum >> 16); /* To 16 bit length. */
        checksum = ~sum;                    /* Complement of one */
}
```

The transmitted side calculates checksum by the above-mentioned and adds it at the end of the transmission data.

The received side calculates by all receive data including checksum.

There is no error if the result of the calculation on the received side is 0xFFFF.

The mistake of the transmitting/receiving data can be easily confirmed by such a method.

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**	-	YUIS	08/05/2008	First Edition
*A	5293564	YUIS	06/02/2016	Migrated Spansion Application Note “AN07-00155-1E” to Cypress format.
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