Module Status and Input Data

Chapter Objectives

In this chapter you will read about:

- **reading data from your module**
- **block transfer read data format**

Reading Data from the Module

Block transfer read (BTR) programming moves status and data from the module to the processor's data table in one I/O scan. The processor user program initiates the request to transfer data from the module to the processor.

The transferred words contain module status, channel status and input data from the module. The maximum BTR data file length required is 28 words.

Block transfer reads are defined for each type of module platform, rather than type of outputs/inputs. The types of modules are:

Possible Combinations	Appendix
8 out/0 in	C
7 out/1 in	K
6 out/ 2 in	I
5 out/ 3 in	J
4 out/4 in	H
3 out/5 in	G
2 out/6 in	E
1 out/ 7 in	F
0 out/8 in	B
2 out/2 in	D

For example, the BTR from the 1771-NB4T (two 0-25mA out/two thermocouple in) is identical to the BTR for the 1771-NB4S (two 0-25mA out/two 4-20mA in), since both are 2 input/2 output modules.

When you perform a BTR for a specific module, the bits for fields that do not pertain to your specific module are set to zero.

Complete block transfer read data formats and bit/word descriptions for your particular module are shown in the Appendices.

Block Transfer Read Data Format

The block transfer read data format consists of an initial block header which identifies the type of module (input, output, or output/input), and groups of words that contain information on either an input channel or an output channel.

Output channel words are configured immediately after the block header. If the module contains both output and input channels, the output channel words come first in the block transfer read data format.

"Outputs Only" Block Transfer Read Data Header

This header is used for modules with outputs only (such as cat. no. 1771-NOC and 1771-NOV).

Word/Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Word/Octal Bit	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
0	Constant = 8800 Hexadecimal															
1	Power up	Bad Chan. Data	Mod Alarm	RTS Time out	I/O Reset	Program Verify		Mod Fault	Bad Prog	Bad Struct	Unused = 0					
2	Constant = 8000 Hexadecimal															
3	Unused = 0															

The bit/word descriptions for the "outputs only" header block are shown below.

Word	Decimal Bit (Octal Bit)	Definition
Word 0	Bits 00-15 (00-17)	Always 8800 Hexadecimal
Word 1	Bit 00–05	Not used. Always 0
	Bit 06	Bad structure. This bit is set if there is an error in the BTW header.
	Bit 07	Bad program. This bit is set if any of the module level programming data is illegal.
	Bit 08 (10)	Module fault. This bit is set if any of the programming data sent to the module in the most recent BTW was illegal, or if one or more channels has the bad calibration bit set.
	Bits 09-10 (11-12)	Program verify. Indicates the result of verify request. 00 = verify not requested; 10 = verify failed; 11 = verify succeeded
	Bit 11 (13)	I/O reset. This bit is set whenever the I/O reset line on the backplane is asserted.
	Bit 12 (14)	RTS timeout. This bit is set if a BTR was not requested of the module within the RTS sample time.