

Bit Packing Information into Registers



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Bit packing involves using a single register, or range of contiguous registers, to represent multiple I/O values, instead of using a single register for each I/O value.

When you use a single register for each discrete I/O value, only the first bit is used and the other 15 bits remain unused. Bit-packing allows all 16 bits of a register to be used to store I/O values. Bit-packing discrete data is also the most efficient way to read (or write) data from a Sure Cross® DX80 Gateway because users can read or write registers for all devices using one Modbus message.

For example, registers 6611, 6612, and 6613 bit-pack the discrete input 1 values from all network devices into these three contiguous registers. The Gateway's discrete IN 1 value is copied into bit 0 of register 6611, Node 1's discrete IN 1 value is copied into bit 1 of register 6611, and so on.

Register Address	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
6611	Node 15	Node 14	Node 13	Node 12	Node 11	Node 10	Node 9	Node 8	Node 7	Node 6	Node 5	Node 4	Node 3	Node 2	Node 1	Gateway
6612	Node 31	Node 30	Node 29	Node 28	Node 27	Node 26	Node 25	Node 24	Node 23	Node 22	Node 21	Node 20	Node 19	Node 18	Node 17	Node 16
6613	Node 47	Node 46	Node 45	Node 44	Node 43	Node 42	Node 41	Node 40	Node 39	Node 38	Node 37	Node 36	Node 35	Node 34	Node 33	Node 32

Similarly, the values for the status registers and discrete outputs values are bit-packed.

For more information about all bit-packed registers, refer to the [Host Configuration Instruction Manual](#) (p/n 132114). All bit-packed registers are detailed within this manual, including information on bit-packed status registers, discrete inputs, and discrete outputs.