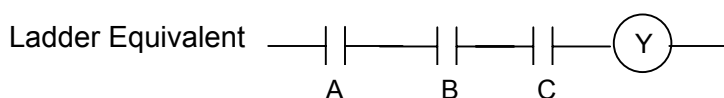
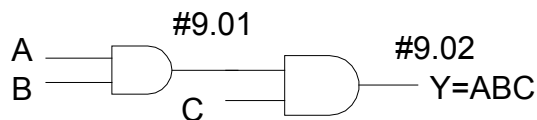
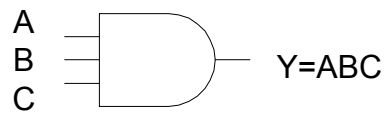


The Application Note is pertinent to the  
Unidrive, Mentor II / Quantum III Drive Family

### 3-Input Logic Gates

By virtue of having 2 free standing two input logic gate functions within our Unidrive, Mentor II and Quantum III drives, 3 input gates can be achieved. For example, to achieve a 3 input AND function, one would simply use logic gate #1 to perform the first AND and then obtain this result from the second AND gates input source then AND that with the remaining input of the second AND gate.



Obviously, this same procedure would be used to obtain the other types of 3 input gates ( NAND, OR, NAND.

For more information on this and related topics see

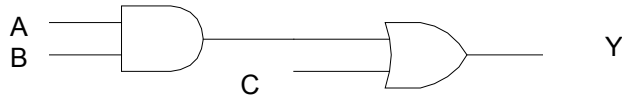
CTAN140 Click here → [www.emersonct.com/pdProducts/downloads/appNotesPDF/ctan140.pdf](http://www.emersonct.com/pdProducts/downloads/appNotesPDF/ctan140.pdf)  
CTAN122 Click here → [www.emersonct.com/pdProducts/downloads/appNotesPDF/ctan122.pdf](http://www.emersonct.com/pdProducts/downloads/appNotesPDF/ctan122.pdf)

## Combinatorial Logic

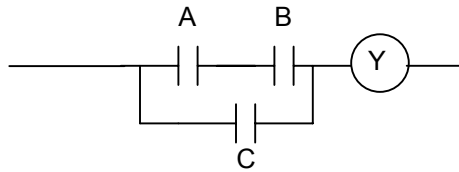
Using similar techniques as described in application note CTAN140, the standard AND/OR and OR/AND function can be obtained to provide logic functions such as those shown below.

### AND/OR

$$Y = (A \bullet B) + C$$



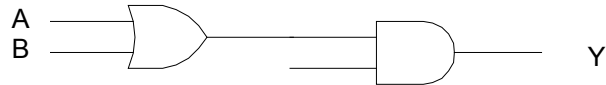
Ladder Equivalent



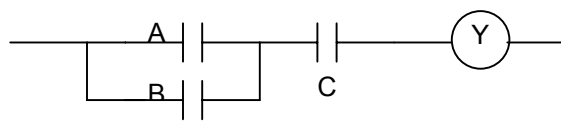
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### OR/AND

$$Y = (A + B) \bullet C$$



Ladder Equivalent



Naturally, various renditions of these can be achieved through use of the input and output inverters to arrive at complex looking Boolean functions such as:

$$Y = (A \bullet \bar{B}) + \bar{C}$$

$$Y = \overline{(\bar{A} + B) \bullet C}$$

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## Conclusion

By exploiting the built-in capabilities within our drives', one can reduce system component cost, wiring labor etc. by absorbing what would have been done with external relay logic. For additional similar application ideas see Time Delays-CTAN122, Programmable Analog I/O-CTAN111 and use of the Built-In Comparators-CTAN 142.

Questions ?? Ask the Author:

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