Application Note

Substation Automation and Protection Division

Auto-reclosing of Feeder Breakers after Bus Restoration

Continual efforts are made to improve reliability of service by decreasing down time. These efforts are assisted by the automation capabilities available within advanced technology relay systems such as the DPU2000R. In distribution substations, bus operations are typically followed by the automatic opening of feeder breakers that bus fed. Having those feeder breakers automatically close when the bus has been restored is desirable as it speeds the return of service and reduces costs associated with sending personnel to close the feeder breakers locally. This auto-reclosing upon bus restoration can be easily managed using the programmable logic of the DPU2000R feeder protection system.

Figure 1 shows the logic diagram for closing the feeder breaker after the bus voltage has been restored. Note in cases where the bus restoration will occur within 200 minutes of its loss, use the 79V reclosing feature discussed in Section 1 of the DPU2000R Instruction Booklet. The close signal will not be initiated unless first, the breaker has been opened externally, which is the case in a bus operation, and second, the bus voltage has returned to a satisfactory level set by the protection engineer.

This feature is programmed in the DPU2000R using the input and output mapping shown in Figure 2. Note that User Logical Inputs and Outputs and Feedback Inputs and Outputs(I/O) are used in this application. See Application Note AN-88D-01 and Section 6 of the DPU2000R Instruction Booklet for more information on User Logical and Feedback I/O operation. Note that the Single Shot Reclose Initiate logical input *79S* could be used in place of the logical input *CLOSE* if a delay, 79-1 Open Interval Time, or supervision, via the logical input *43A*, is desired – the logical input *CLOSE* is not supervised by the auto-reclose inhibit logical input *43A*.

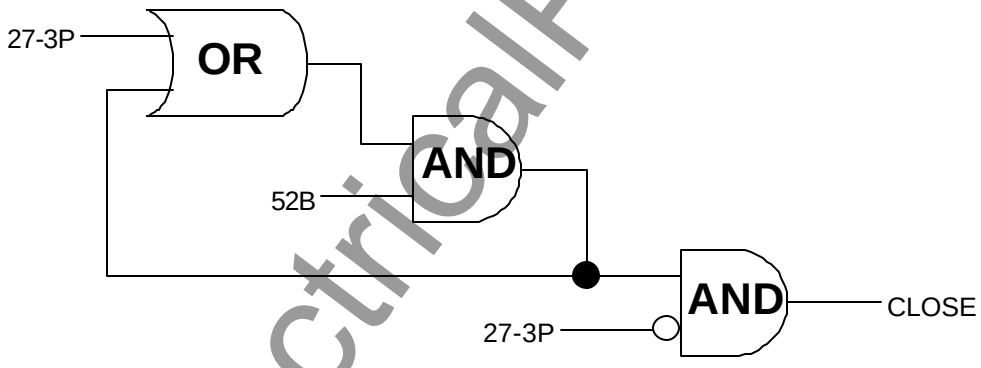

Figure 1 - Logic Diagram.

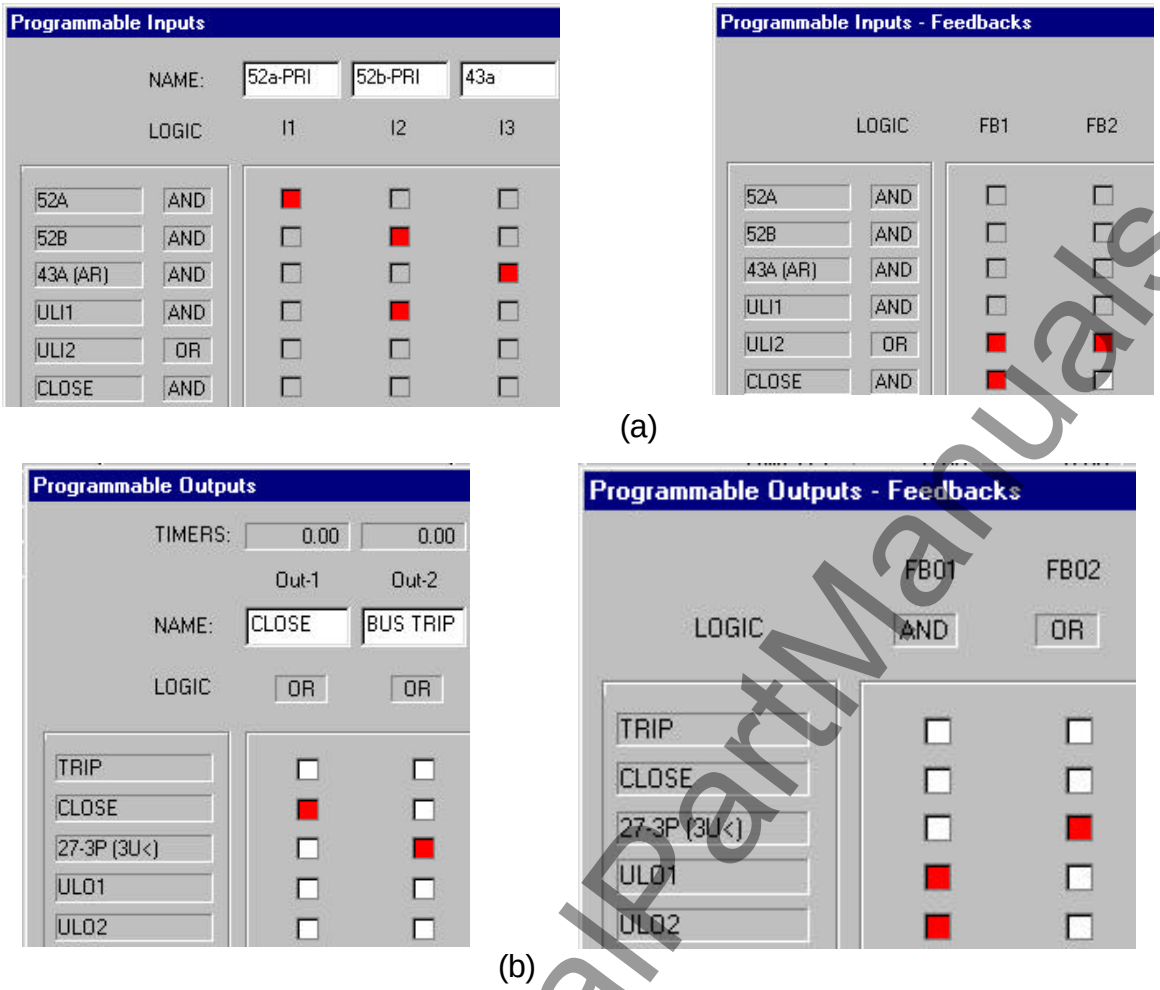

Figure 2 - Programmable mappings: (a) input map; (b) output map.

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