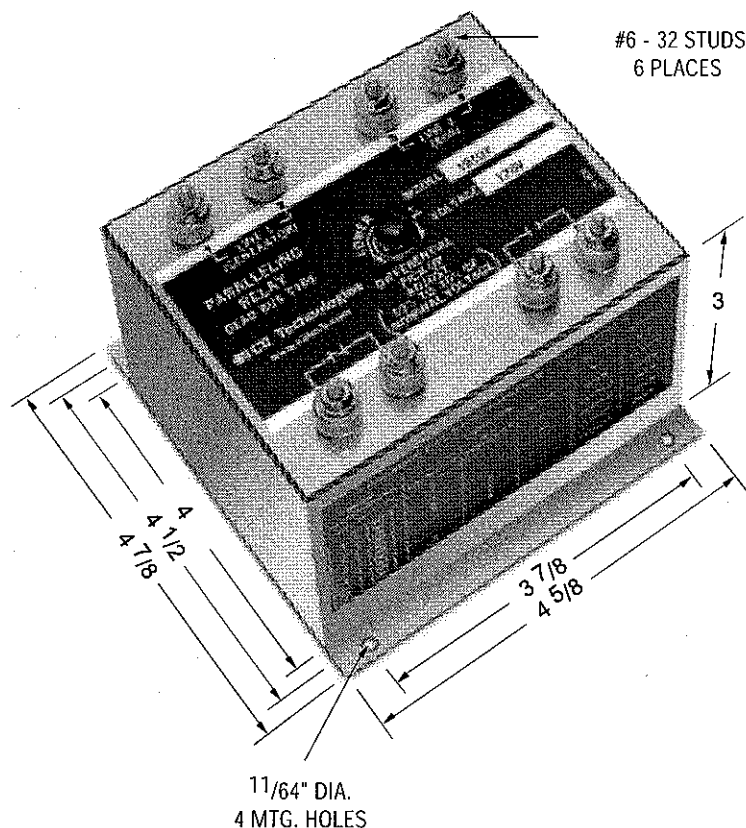


**WILMAR™ Protective Relays – 1800 Series**



Note: Dimensions in inches. Multiply values by 25.4 for dimensions in mm.

**Function: 25**

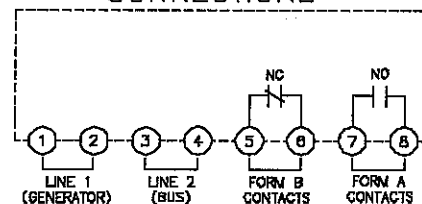
- ANSI/IEEE C37.90-1978
- UL file No. E58048
- CSA file No. LR61158



**Application:**

These relays are designed for automatic paralleling (synchronizing) of generators. The relays sense the phase angle displacement and the amplitude difference between two voltages and permit paralleling only when both voltages are equal and in phase. A short time delay is provided to assure that the frequencies are essentially the same at the moment of paralleling. The basic series is designed to parallel two or more energized AC generators. The "Dead Bus" type provides paralleling of AC generators to the main bus. They permit electrical connection of an energized generator to an un-energized line (Dead Bus). If the bus is energized, connection of the generator to the bus is permitted only when both are synchronized.

**CONNECTIONS**



**PRODUCT SPECIFICATIONS**

| Part Number              | 1800 Series                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensing Voltage .....    | 120 V, 230 V, 277 V, 380 V, 460 V, 575 V, & 415 V                                                                                                             |
| Line Frequency .....     | 50-500 Hz                                                                                                                                                     |
| Pick-Up Adjustment ..... | External adjustment for field sensing of 10-30% of nominal input voltage. (Vertical voltage differential of 6 to 18 electrical degrees).                      |
| Time Delay .....         | Fixed @ 60 milliseconds is provided to assure that the frequencies of both input lines are sufficiently close to permit paralleling within the preset window. |
| Output Contacts .....    | One set N.O., one set N.C.<br>5 amp resistive at 120 VAC or 28 VDC                                                                                            |

**A. 3 Phase, 4 Wire System**

- Connect phase "A" of LINE 1 to terminal 1
- Connect phase "A" of LINE 2 to terminal 3
- Connect the neutrals to terminals 2 & 4

**B. 3 Phase, 3 Wire or 1 Phase, 2 Wire System**

- Connect phase "A" of LINE 1 to terminal 1
- Connect phase "B" of LINE 1 to terminal 2
- Connect phase "A" of LINE 2 to terminal 3
- Connect phase "B" of LINE 2 to terminal 4

Consult factory for additional models and options.

## Selection Guide (Typical Applications)

| Sensing Voltage | Series 1800<br>Generator to Generator                                                                                       | Series 1800DB<br>Generator to Bus                                                                                                                                              | Series 1800DDB<br>Bus to Bus                                                                                                                                     |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Permits paralleling of two generators only when they are "on-line" and their voltages are equal and in phase (synchronized) | Normally used to permit paralleling of a generator to a bus when: (a) both line voltages are equal and in phase, or: (b) when the generator is "on-line" and the bus is "dead" | Permits paralleling of two power lines (buses) when: (a) both line voltages are equal and in phase, or: (b) when either bus is "hot" and the other bus is "dead" |
| 120 Volts       | 1810X                                                                                                                       | 1810DBX                                                                                                                                                                        | 1810DDBX                                                                                                                                                         |
| 230 Volts       | 1820X                                                                                                                       | 1820DBX                                                                                                                                                                        | 1820DDBX                                                                                                                                                         |
| 380 Volts       | 1830X                                                                                                                       | 1830DBX                                                                                                                                                                        | 1830DDBX                                                                                                                                                         |
| 460 Volts       | 1840X                                                                                                                       | 1840DBX                                                                                                                                                                        | 1840DDBX                                                                                                                                                         |
| 575 Volts       | 1850X                                                                                                                       | 1850DBX                                                                                                                                                                        | 1850DDBX                                                                                                                                                         |
| 415 Volts       | 1860X                                                                                                                       | 1860DBX                                                                                                                                                                        | 1860DDBX                                                                                                                                                         |
| 277 Volts       | 1870X                                                                                                                       | 1870DBX                                                                                                                                                                        | 1870DDBX                                                                                                                                                         |

|   |        | Condition |               |        | Series 1800<br>Contacts |       | Series 1800DB<br>Contacts |       | Series 1800DDB<br>Contacts |       |
|---|--------|-----------|---------------|--------|-------------------------|-------|---------------------------|-------|----------------------------|-------|
|   |        | Energized | Not Energized | Synch. | N.C.                    | N.O.  | N.C.                      | N.O.  | N.C.                       | N.O.  |
| 1 | Line 1 | X         |               |        | Open                    | Close | Open                      | Close | Open                       | Close |
|   | Line 2 | X         |               | Yes    |                         |       |                           |       |                            |       |
| 2 | Line 1 | X         |               | No     | Close                   | Open  | Close                     | Open  | Close                      | Open  |
|   | Line 2 | X         |               | No     |                         |       |                           |       |                            |       |
| 3 | Line 1 | X         |               |        | Close                   | Open  | Open                      | Close | Open                       | Close |
|   | Line 2 |           | X             |        |                         |       |                           |       |                            |       |
| 4 | Line 1 |           | X             |        | Close                   | Open  | Close                     | Open  | Close                      | Open  |
|   | Line 2 |           | X             |        |                         |       |                           |       |                            |       |
| 5 | Line 1 |           | X             |        | Close                   | Open  | Close                     | Open  | Open                       | Close |
|   | Line 2 | X         |               |        |                         |       |                           |       |                            |       |

**Output Contact Options:** 1. Two Form A. (Add -A to Model Number)  
2. Two Form B. (Add -B to Model Number)