



Technical Specification: THREE PHASE VAF WITH PROTECTION RELAY

Model	TMCB-030																								
Display Parameters & Range	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Parameters</th> <th style="text-align: left; border-bottom: 1px solid black;">Range</th> </tr> </thead> <tbody> <tr> <td>Volt: VRY, VYB, VBR</td> <td>45V – 520V</td> </tr> <tr> <td>VRN, VYN, VBN</td> <td>25V – 300V</td> </tr> <tr> <td>Current: IR, IY, IB</td> <td>10% - 120% of CTR</td> </tr> <tr> <td>Frequency</td> <td>45Hz – 55Hz</td> </tr> <tr> <td>Run Hour</td> <td></td> </tr> <tr> <td colspan="2"><u>FAULTs</u></td> </tr> <tr> <td>Phase Voltage</td> <td>Low, High, Low+High</td> </tr> <tr> <td>Current</td> <td>Low, High, Low+High</td> </tr> <tr> <td>Frequency</td> <td>Low, High, Low+High</td> </tr> <tr> <td>Unbalanced Voltage</td> <td></td> </tr> <tr> <td>Reverse Phase Sequence & Single Phasing</td> <td></td> </tr> </tbody> </table>	Parameters	Range	Volt: VRY, VYB, VBR	45V – 520V	VRN, VYN, VBN	25V – 300V	Current: IR, IY, IB	10% - 120% of CTR	Frequency	45Hz – 55Hz	Run Hour		<u>FAULTs</u>		Phase Voltage	Low, High, Low+High	Current	Low, High, Low+High	Frequency	Low, High, Low+High	Unbalanced Voltage		Reverse Phase Sequence & Single Phasing	
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Features	<ul style="list-style-type: none"> True RMS Measurement Three Line Display for V, I, F simultaneously 4 Digits in each display line for better resolution CT Ratio Programming (Range: 5/5 to 9000/5) Auto scrolling & Manual mode selectable Auto decimal shifting for current (from 0.01A to 1A) Programmable Relay (Potential Free Contact) for V, I, F, Un-V and Reverse Phase Sequence Faults Automatic and Manual Relay Reset mode Motor Protection Mode Bright Seven segment LED display for better readability 																								
Accuracy	Class 1.0																								
Display	Three Line Seven Segment display, Size 0.56"																								
CT Selection	Programmable through KeyPad																								
Connection	3-phase, 4 wire																								
Aux. Supply	170V – 260Vac, 50Hz																								
Dimension	96mm(H) x 96mm(W) x 75mm(D)																								
Weight																									

Connection Diagram:

1	2	3	4	5	6	7	8	9
	NC	C	NO		N	B	Y	R
	RELAY				INPUT VOLTAGE (AC)			
Wiring Detail								
CT-B(PH)		CT-Y(PH)		CT-R(PH)		Aux. Supply		
S1	S2	S1	S2	S1	S2	170-260V 50Hz		
10	11	12	13	14	15	16	17	18

Operation Manual:

1. Press **(A/M)** key to select *Manual Mode* or *Auto Mode*. *Auto* LED indicates *Auto Mode*.
2. In *Auto Mode*, following pages are displayed sequentially for 20 sec.
 - a. VRN, VYN, VBN
 - b. VRY, VYB, VBR
 - c. VRN, IR, FREQR
 - d. VYN, IY, FREQY
 - e. VBN, IB, FREQB
 - f. VAVG, IAVG, FREQAVG
 - g. RUN HOUR
3. In *Manual Mode*, repeatedly press **(Scroll)** key till the required mode is displayed.
4. To enter programming mode, press **(Prog)** key for 10 seconds.
5. In Programming mode, the parameter name is displayed in first line and its value is displayed in second line.

CT Ratio Programming

6. The first parameter is CT ratio. The first line show **Ct.Pr** i.e. CT Primary Current. Second line displays the current programmed value. The default value is 100. Use **(←)** key to shift the cursor to right. Use **(↑)** key to increment the digit at current cursor position. Press **(Prog)** key to move to next parameter. NOTE that parameters can be changed / edited only when LOCK (last parameter) is OFF. When LOCK is ON, then the parameters are read-only. To edit them, got to the LOCK parameter by repeatedly pressing **(Prog)** key and change the lock value to OFF. Press **(Prog)** key once again and the meter will show the first parameter i.e. **Ct.Pr** which can be edited now.

Relay Reset Mode

7. The next parameter is Relay Reset Mode. The display shows **Auto** in the first line and its value (**ON** or **OFF**) in second line. Use **(←)** key or **(↑)** key to set the desired value. Press **(Prog)** key to move to next parameter.

Current Fault

8. The next parameter is Current fault parameter. The display shows **rELy** in first line with Current fault LED ON. Second line shows the current relay setting (**OFF, Hi, Lo** or **LoHi**). Use **(←)** key or **(↑)** key to set the desired setting. Press **(Prog)** key to move to next parameter. If Current relay is set OFF, then meter jumps to Voltage Fault.
9. If Current relay is set to **Hi** or **LoHi**, meter displays **Set.H** in the first line and its value (Ampere) in second line. Use **(←)** key and **(↑)** key to set the desired value. Press **(Prog)** key to move to next parameter.
10. If Current relay is set to **Lo** or **LoHi**, meter displays **Set.L** in the first line and its value (Ampere) in second line. Use **(←)** key and **(↑)** key to set the desired value. Press **(Prog)** key to move to next parameter.
11. The next parameter is Delay for Current relay. The display shows **DELy** in the first line and its value (seconds) in second line. Use **(←)** key or **(↑)** key to set the desired value. Press **(Prog)** key to move to next parameter.
12. The next parameter is Current Hysteresis if Auto Relay Reset is selected **ON**. The display shows **HySt** in the first line and its value (Ampere) in second line. Use

⊕ key or ↑ key to set the desired value. Press Prog key to move to next parameter.

Motor Protection Mode

13. If Current relay is set to **LoHi**, meter displays **Prot** in the first line and its value (**ON** or **OFF**) in second line. Use ⊕ key or ↑ key to set the desired value. Press Prog key to move to next parameter.

Voltage Fault




14. The next parameter is Voltage fault parameter. The display shows **rELY** in first line with voltage fault LED ON. Second line shows the Voltage relay setting (**OFF, Hi, Lo** or **LoHi**). Use ⊕ key or ↑ key to set the desired setting. Press Prog key to move to next parameter. If Voltage relay is set OFF, then meter jumps to Unbalanced Voltage Fault.
15. If Voltage relay is set to **Hi** or **LoHi**, meter displays **Set.H** in the first line and its value (Volt) in second line. Use ⊕ key and ↑ key to set the desired value. Press Prog key to move to next parameter.
16. If Voltage relay is set to **Lo** or **LoHi**, meter displays **Set.L** in the first line and its value (Volt) in second line. Use ⊕ key and ↑ key to set the desired value. Press Prog key to move to next parameter.
17. The next parameter is Delay for Voltage relay. The display shows **DELY** in the first line and its value (seconds) in second line. Use ⊕ key or ↑ key to set the desired value. Press Prog key to move to next parameter.
18. The next parameter is Voltage Hysteresis if Auto Relay Reset is selected **ON**. The display shows **HySt** in the first line and its value (Volt) in second line. Use ⊕ key or ↑ key to set the desired value. Press Prog key to move to next parameter.

Un-balanced Voltage Fault




19. The next parameter is Un-balanced Voltage fault parameter. The display shows **rELY** in first line with un-balanced voltage fault LED ON. Second line shows the Voltage relay setting (**OFF** or **ON**). Use ⊕ key or ↑ key to set the desired setting. Press Prog key to move to next parameter. If Un-balanced Voltage relay is set OFF, then meter jumps to Frequency Fault.
20. If Un-balanced Voltage relay is **ON**, meter displays **Set** in the first line and its value (Volt) in second line. Use ⊕ key and ↑ key to set the desired value. Press Prog key to move to next parameter.

Frequency Fault





21. The next parameter is Frequency fault parameter. The display shows **rELY** in first line with Frequency fault LED ON. Second line shows the Frequency relay setting (**OFF, Hi, Lo** or **LoHi**). Use ⊕ key or ↑ key to set the desired setting. Press Prog key to move to next parameter. If Frequency relay is set OFF, then meter jumps to Phase Sequence Fault.
22. If Frequency relay is set to **Hi** or **LoHi**, meter displays **Set.H** in the first line and its value (Hertz) in second line. Use ⊕ key and ↑ key to set the desired value. Press Prog key to move to next parameter.
23. If Frequency relay is set to **Lo** or **LoHi**, meter displays **Set.L** in the first line and its value (Hertz) in second line. Use ⊕ key and ↑ key to set the desired value. Press Prog key to move to next parameter.
24. The next parameter is Delay for Frequency relay. The display shows **DELY** in the first line and its value (seconds) in second line. Use ⊕ key or ↑ key to set the desired value. Press Prog key to move to next parameter.

25. The next parameter is Frequency Hysteresis if Auto Relay Reset is selected **ON**. The display shows **HySt** in the first line and its value (Hertz) in second line. Use  key or  key to set the desired value. Press  key to move to next parameter.

Phase Sequence Fault

26. The next parameter is Phase Sequence fault parameter. The display shows **rELy** in first line with Phase Sequence fault LED ON. Second line shows the Phase Sequence Relay setting (**OFF** or **ON**). Use  key or  key to set the desired setting. Press  key to move to next parameter.

Program Lock

27. The next parameter is Program Lock parameter. The display shows **LoC** in first line. Second line shows the its value (**OFF** or **ON**). Use  key or  key to set the desired setting. To save the parameters and exit, press  key continuously for 3 seconds. To move to first parameter, press  key once



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