



How to Map and Test Phase Peak Demand and Load Current Alarms for Single Phase Tripping

Phase Peak Demand Alarm (PDA) limits can be mapped in order to protect the VR-3S and Power System from excessive Peak Demand current. In this case, if Phase Peak Demand exceeds 560 A on any phase for the specified Demand Time Constant, all phases will trip and lockout.

Load Alarm (LOADA) limits can be mapped in order to mitigate excessive neutral current that can occur during Single Phase tripping. In this case, if one phase is locked out and current exceeds 200 A on any phase, all three phases will trip and lockout.

Relevant Programmable I/O Names and Description:

LOCKA LOCKB LOCKC	Lockout A Lockout B Lockout C Each output goes HIGH if the corresponding pole is in lockout. (Applies only to units with single phase tripping option.)
LOADA	Load Current Goes HIGH 60 seconds after any single phase of load current rises above the Load Alarm setting. If the measured value drops below the Alarm setting before the 60-second timer expires, the timer will reset.
PDA	Phase Peak Demand Goes HIGH 60 seconds after the demand current for any phase has exceeded the Phase Demand Alarm setting. This alarm is based on the incremental demand values and not the instantaneous values as in the load alarms. If the measured value drops below the Alarm setting before the 60-second timer expires, the timer will reset.

Precautions

1. The settings in the attached example are for reference only and may not be suitable for your application.

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Instructions

1. From the Main Menu select “Settings”.

A screenshot of the 'Main Menu' software interface. At the top, there's a blue header bar with the text 'Main Menu'. Below this, two text boxes are visible: 'Name/Model: SN.220406' and 'Catalog Number: 8R371041313111'. The central part of the screen features a 'Selections' window with a list of menu items. 'Settings' is highlighted with a blue background. The other items in the list are 'Metering', 'Records', 'Operations', 'Test', 'Front Panel Status', 'Waveform Capture', 'Programmable Curves', 'Trip/Close Commands', 'Miscellaneous Commands', 'Power Quality', and 'Quick Setup'. At the bottom of the interface, there are four buttons arranged in a 2x2 grid: 'Transmit All Database Values to Unit', 'Detail...', 'Receive All Settings from Unit', and 'Back'.

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2. From the Settings Menu select “Configuration Settings”.

Settings Menu

Name/Model: SN.220406 Catalog Number: 8R371041313111

Selections

- Configuration Settings
- Primary Settings - Protection
- Primary Settings - Recloser
- Alternate 1 Settings - Protection
- Alternate 1 Settings - Recloser
- Alternate 2 Settings - Protection
- Alternate 2 Settings - Recloser
- Feedback Allocation Mask
- Counter Settings
- Programmable Outputs
- Programmable Inputs
- FLI Index & User Names
- ULI/ULO Configuration
- Register Configuration
- Miscellaneous Settings
- Alarm Settings
- Clock

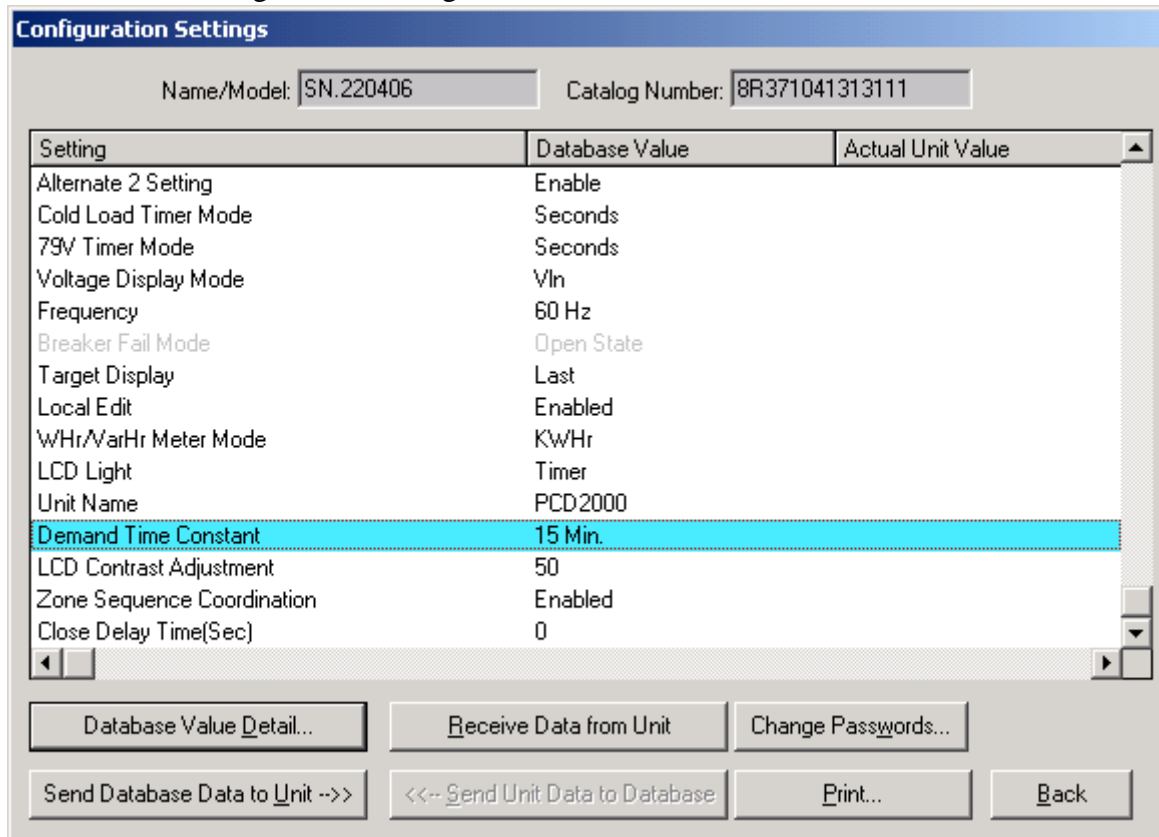
»» = Current Setting

Detail... **Back**

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3. From Configuration Settings, select “Demand Time Constant”.

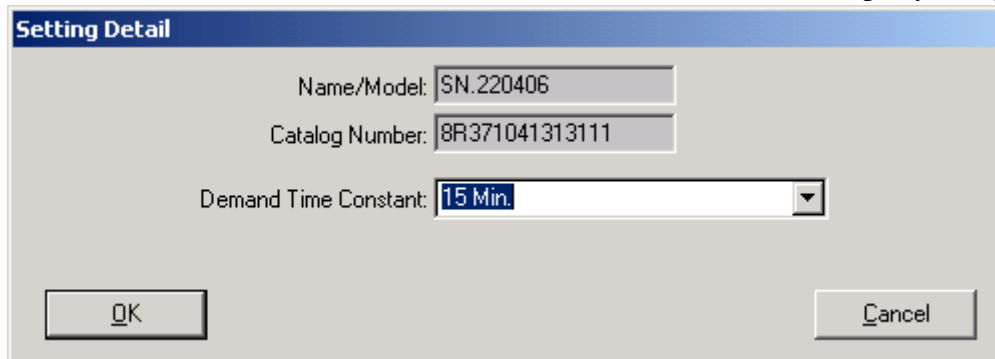


The Configuration Settings dialog box displays a table of settings for a device. The 'Demand Time Constant' setting is highlighted in blue.

Setting	Database Value	Actual Unit Value
Alternate 2 Setting	Enable	
Cold Load Timer Mode	Seconds	
79V Timer Mode	Seconds	
Voltage Display Mode	Vln	
Frequency	60 Hz	
Breaker Fail Mode	Open State	
Target Display	Last	
Local Edit	Enabled	
WHz/VarHr Meter Mode	KWHr	
LCD Light	Timer	
Unit Name	PCD2000	
Demand Time Constant	15 Min.	
LCD Contrast Adjustment	50	
Zone Sequence Coordination	Enabled	
Close Delay Time(Sec)	0	

Buttons at the bottom: Database Value Detail..., Receive Data from Unit, Change Passwords..., Send Database Data to Unit -->, <-- Send Unit Data to Database, Print..., Back.

4. Select a Demand Time Constant of 5, 15, 30 or 60 minutes per your application requirement.



The Setting Detail dialog box shows the 'Demand Time Constant' dropdown menu set to '15 Min.'.

Buttons: OK, Cancel.

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5. From the Settings Menu, select “Alarm Settings”.

Settings Menu (Not Connected)

Name/Model: CP&L_REL2.1-560A-R1 Catalog Number: 8R371041513101

Selections

- Configuration Settings
- Primary Settings - Protection
- Primary Settings - Recloser
- Alternate 1 Settings - Protection
- Alternate 1 Settings - Recloser
- Alternate 2 Settings - Protection
- Alternate 2 Settings - Recloser
- Feedback Allocation Mask
- Counter Settings
- Programmable Outputs
- Programmable Inputs
- FLI Index & User Names
- ULI/ULO Configuration
- Register Configuration
- Miscellaneous Settings
- Alarm Settings**
- Clock

= Current Setting

Detail... Back

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6. From Alarm Settings, Select “Phase Current Demand Alarm (PDA) 560” A.

Alarm Settings (Not Connected)

Name/Model: Catalog Number:

Setting	Database Value	Actual Unit Value
KSI Summation Alarm (KSI)	Disable	
Overcurrent Trip Counter Alarm (OCTC)	Disable	
Reclose Counter 1 Alarm (79CA1)	Disable	
Reclose Counter 2 Alarm (79CA2)	Disable	
Phase Current Demand Alarm (PDA)	560	
Neutral Current Demand Alarm (NDA)	Disable	
kiloVAR Demand Alarm (VARDA)	Disable	
Low Power Factor Alarm (LPFA)	Disable	
High Power Factor Alarm (HPFA)	Disable	
Load Current Alarm (LOADA)	200	
Positive kiloVAR Alarm (PVARA)	Disable	
Negative kiloVAR Alarm (NVARA)	Disable	
Positive kWatt/MWatt Alarm 1 (PWatt1)	Disable	
Positive kWatt/MWatt Alarm 2 (PWatt2)	Disable	

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7. From Alarm Settings, Select “Load Current Alarm (LOADA) 200” A.

Alarm Settings (Not Connected)

Name/Model: Catalog Number:

Setting	Database Value	Actual Unit Value
KSI Summation Alarm (KSI)	Disable	
Overcurrent Trip Counter Alarm (OCTC)	Disable	
Reclose Counter 1 Alarm (79CA1)	Disable	
Reclose Counter 2 Alarm (79CA2)	Disable	
Phase Current Demand Alarm (PDA)	560	
Neutral Current Demand Alarm (NDA)	Disable	
kiloVAR Demand Alarm (VARDA)	Disable	
Low Power Factor Alarm (LPFA)	Disable	
High Power Factor Alarm (HPFA)	Disable	
Load Current Alarm (LOADA)	200	
Positive kiloVAR Alarm (PVARA)	Disable	
Negative kiloVAR Alarm (NVARA)	Disable	
Positive kWatt/MWatt Alarm 1 (PWatt1)	Disable	
Positive kWatt/MWatt Alarm 2 (PWatt2)	Disable	

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8. Select the Programmable Outputs as shown:

[illegible]

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9. Select the Programmable Inputs as shown:

Programmable Inputs - Source: Local (Unchanged) (Not Connected)

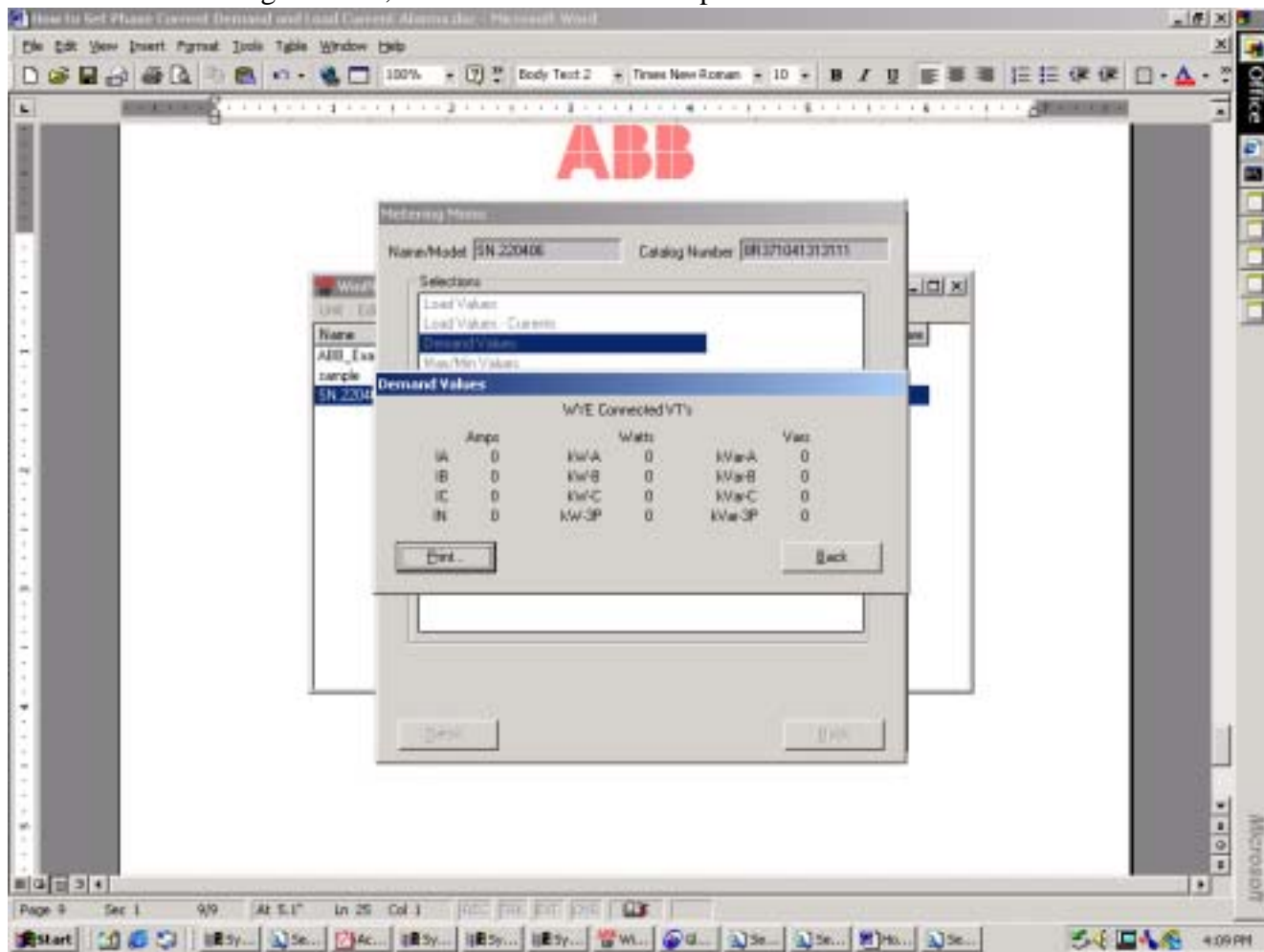
Name:	Logic	In1b	In2b	In3b	In4b	In5b	In6b	In7b	In8b	FBI6	FBI7	FBI8	FBI5	FBI4	FBI3	FBI2	FBI1
													No AC	Pb Loc	Load	Ram Tr.	Loc Tr.
52aA	AND	C															
52aB	AND		C														
52aC	AND			C													
52aD	AND				C												
52aE	AND					C											
52aF	AND						C										
52aG	AND							C									
52aH	AND								C								
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CLSBUK	OR															C	C
ALT2	OR															E	C
TABMSG	AND															E	
ULI1	AND													C	C		
ULI2	AND													C	C		
ULI3	AND													C	C		
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C = Enable = Closed, Disable = Open
 Q = Enable = Open, Disable = Closed

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10. Phase Current Demand Alarm (PDA) testing can be performed by applying single phase or three phase secondary current injection of 1 A (600:1 CT ratio) into the PCD PT/CT module. The PCD will trip in the selected Demand time plus 60 seconds. The Demand Metering can be viewed during the Test; reference the attached depiction:



11. Load Current Alarm (LOADA) testing can be performed by tripping A or B or C phase to Lockout and applying current greater than 200 A (.33 A secondary current injection) to the remaining closed-in phases. The PCD will trip and lockout all phases in approximately 60 seconds.

Call 1-800-929-7947 x 5 or +1-407-732-2000 x 2510 for any other questions you may have.

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ABB Inc. has made every reasonable attempt to guarantee the accuracy of this document, however, the information contained herein is subject to change at any time without notice and does not represent a commitment on the part of ABB Inc. These instructions do not purport to cover all details or variations in equipment, nor provide for every possible contingency to be met in conjunction with installation, operation or maintenance. Should particular problems arise which are not covered sufficiently, please contact ABB Inc.

ABB Inc.

655 Century Point
Lake Mary, FL 32746

Telephone
407-732-2000

Fax
407-732-2161

www.abb.com/mediumvoltage

Instructions
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