



DPD Android App

Threephase Multifunction Monitoring Relay with NFC Communication

User Manual









DPD is a three-phase multifunction configurable monitoring relay suitable for both Delta and Star mains.

It protects loads from wrong phase sequence, neutral and phase loss, additionally voltage, frequency and asymmetry thresholds can be set and provide output signals.

DPD is delivered with a set of factory settings, among the two available ones, which are the most commonly used.

If factory default parameters are not completely suitable they can be modified according to own requirements, by Windows PC or Android tablet and smartphone.

A Desktop and an Android apps are available, allowing to select on screen the required settings, save them, for future use and send the new configuration to the device to be configured.

NFC communication can also be used, by means of the proper app, to download the configuration from one device and to send the same configuration to n devices.

About factory settings, see "DPD DEFAULT PARAMETERS" table on the last page.





DPD Manager Installation

System requirements for ANDROID APP:

- OS

: Android operating system 4.1 or higher

- COMMUNICATION

: Built in NFC reader / writer

• Download the ANDROID APP from Google Store

https://play.google.com/store/apps/details?id=us.belka.dpd&hl





 \circ $\;$ Launch the app by tapping the DPD App icon





Create DPD Configurations



- At first App start the screen will be as shown above.
- o Tap on

+

to select the required function



• A menu will appear with 3 choices. A new configuration can be created by tapping on "*New configuration*"



22/11/2017





- In this page the DPD version has to be selected.
- If the DPD has been purchased after November 2017 DPD-2 has to be selected, Else select DPD-1.

New Configuration → RMATION GRID TYPE SCI POINTS PD Version 2 Configuration DPD Enhanced Software with and engineer w ² e ³ r ⁴ t ⁵ y ⁶ u ⁷ i ⁸ o ⁹ p ⁹ s d s d f g h z x c v n ∞ • ⊕ EN-ES+IT • €	one IT 🖞	ତ 🕅 ୧](ゑ 50%	11:29
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- In the first project page we can input name and description
- \circ $\;$ Then we tap on top right arrow to go to next configuration page.





GRID TYPE		
IE TYPE		
③ 3 PH	⊖ 3 F	PH + N
Delta voltage		
	•	<u>400</u> v
Power ON Del	e e	– 3.0 s

- *"Grid Type page"*. Select Line type: three phase with neutral or without neutral grid type.
- Select the grid nominal voltage: In case 3PH grid type is selected the voltage value is Line to Line, in case of 3PH+N Line type, the Voltage value is Line to Neutral.

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← New C	Configuration	→
GRID TYPE		
LINE TYPE		
🔵 з рн	() 3 Pł	H + N
Star voltage		
-	•	230_v
Power ON De	lay	
		4.5 s
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- *"Power ON Delay"* time delays the actual line monitoring at device start-up. Delay can be configured from 0 to 6s.
- \circ $\;$ Press the right top arrow to go to next configuration page.





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← Edit cor	nfiguration \rightarrow
	PRIORITY ALARM OUTPUT 1
ALARM 1	ALARM 2
ALARM 3 Not configured	ALARM 4
ALARM 5 Not configured	ALARM 6
ALARM 7 Not configured	ALARM 8 Not configured
ALARM 9	ALARM 10
\triangleleft	0

- Up to 10 alarms can be configured.
- \circ $\;$ Select one by one the alarms that are required to be set.

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<i>← 1</i>	Alarm 3		i 🗸
Rule Frequence	:y > 51.2 Hz		
Freque	ncy 👻 Over	51.2	Hz
Voltage	•		
Freque	ncy		
Asymn	netry		3 %
1	2	3	-
4	5	6	—
7	8	9	$\langle \times \rangle$
,	0		\rightarrow
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1000			

• Each one of the 10 alarms can be set as above: select among voltage, frequency or asymmetry.





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← AI	arm 3		Î 🗸
Rule Frequency Frequenc	> 51.2 Hz cy Over Over	51.2	Hz
Hyster	esis ^{Under}		
	•		3%
1	2	3	-
4	5	6	
7	8	9	$\langle \times \rangle$
,	0		→
	▽ 0	C	

• After having selected, for instance frequency as in the example above, select whether, it is Over-frequency or Under-frequency detection, that you require.

vodafone IT므	ψ	© 10 ±0 🤅	ີ 50% 🖪	D I 11:36
← A	larm 5		Ē	~
Rule Asymmet	ry > 10 %			
Asymm	etry 10			%
Voltage				
Frequer	ю			- 1
Asymm	etry		2	%
1	2	3		-
4	5	6		-
7	8	9	<	\times
,	0	•		€
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1000				

• Asymmetry selection doesn't have Over nor Under, just the percentage.





odafone IT 🜵		©N01?.	ıl 50% 🟊 I 11:33
← A	larm 1		i <
Rule			
Voltage >	440 V		
Voltage	• Over •	440	v
Hyste	resis		
•			2%
1	2	3	-
4	5	6	<u> </u>
7	8	9	$\langle \times \rangle$
,	0		\rightarrow
	\bigtriangledown (D C	
100000			

• When the measurement type and value is set, hysteresis can also be adjusted.

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← µ	Alarm 1			Î	~
•				2	%
Delay	r				
On					
			-	60	.0 s
Off			_	600).0 s
1	2		3		-
4	5		6		
7	8		9		$\langle \times \rangle$
,	0				→
	\bigtriangledown	0			

Scroll the page down until bottom

- $\circ~$ Delay on Alarm and Alarm OFF delay can be set. Delay OFF up to 10', whilst delay on alarm up to 60s.
- \circ $\;$ Tap on the top right tick \checkmark when finished.



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← New Config	uration \rightarrow
SET POINTS PRIC	RITY ALARM OUTPUT 1
ALARM 1 Voltage > 440 V	ALARM 2 Voltage < 350 V
ALARM 3 Frequency > 51.2 Hz	ALARM 4 Frequency < 48.8 Hz
ALARM 5 Asymmetry > 10 %	ALARM 6 Not configured
ALARM 7	ALARM 8 Not configured
ALARM 9	ALARM 10
\triangleleft (

- Configured alarms would be with dark background with the indication of the setting type and value.
- When all alarms are set press the "next" arrow to go to next configuration step

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← Edit config	\leftarrow Edit configuration \rightarrow				
PRIORITY ALARM	OUTPUT 1	OUTP	UT 2		
🛕 Warning 🛕					
You shouldn't change t	the default se	ttings			
Enabling phase loss	6				
Phase loss threshol	ld				
		85	%		
Enabling neutral los	S				
Neutral loss thresho	old				
		20	%		
Enabling phase seq	uence				
Enabling measure o	out of range				
\bigtriangledown	0				
100					

 In the "priority alarm" page phase loss, neutral loss, phase sequence and out of range measurements alarms can be enabled or disabled. <u>It is not advised to change</u> <u>these setting unless aware of their functions!</u>







• On "output 1" page the one or more of the previously set alarms are associated to output.



- \circ $\;$ When more alarms are set they are associated with "OR" or "AND" function.
- Output relay can be configured to operate as "Normally Energised" or "Normally de-energised". Normally energised will turn off relay upon alarm.
- \circ When finished tap the tick $\sqrt{}$ to complete the complete configuration.





- This last page summarises the project configuration settings.
- If the configuration is correct tap "Apply Configuration" to upload it to target DPD/s.



• When popup appears place the smartphone NFC reader next to DPD front face.



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• When a DPD has been tracked, the popup shown above appears. As there might be more than one DPD, next to the target device, it is necessary to check whether it is the correct target device. Check it with the one marked on the DPD front face.



• If the DPD is the correct one tap "*Apply*", else tap "*Change relay*" and try again.



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	DPD Version	2.0	1	Î
MODE	L ID: 2			
	onfiguration DPD Soft			
3 P <u>H</u>	400V			-
	~			_
OL	Configuratio succes	on appl sfully	ied	
οι	DONE	APPL	AGAIN	
Frequ 48.8	iency > 51.2 Hz (Hz	req אנ	uency <	l
	APPLY CONFI	GURATIO	N	
	< 0			
1000				

• When the above displayed popup appears the configuration has been successfully uploaded to DPD and it possible to exit, by tapping "*Done*" or apply the same configuration to another device, by tapping "*Apply Again*".



Load Configuration from another DPD

• The configuration can be downloaded from an already configured DPD to replicate its configuration on another device or modify it before using it.







 \circ $\;$ When the popup appears place the phone next to the DPD front face.



• Check the serial number of the source DPD.



• When the summary page appears, download is complete and configuration can be saved, modified or sent to another device.





Configuration File Exporting



o Configuration files can be exported. Top on the share icon as shown above



- File can saved on cloud, sent by mail, skyped etc.
- \circ $\;$ Recipient has to download file and open it with DPD.





Device locking / unlocking

• When commissioned DPDs can be locked to avoid configuration tampering



• From top right menu, select "Lock".



o Place the smartphone next to DPD front face



o Insert a 4 digit numerical password







o Press lock after password input





AFTER THE DEVICE HAS BEEN LOCKED IT IS NOT POSSIBLE TO UNLOCK IT WITHOUT POWER SUPPLY!

- To unlock apply the same procedure by pressing "Unlock".
- In case the password has been lost, please contact Carlo Gavazzi customer service: please remember to provide the number written on the DPD front face.
 A password will be provided, by the service, which solely valid for the device whose number has been provided.

Once device has been unlocked the old password is lost and new one can be introduced





Real Time Readings

The real time reading it is only possible when the device is under operation.



• Tap onto "Real Time"



• Place smartphone next to DPD front face.



 \circ $\;$ Confirm is the tracked relay is the correct one.



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Real time	
ALARM STATUS	ELECTRICAL VALUES
Non Priority A	larms
A1 Voltage > 440 V Off	A2 Voltage < 360 V Off
Priority Alarm	IS
Priority Alarm Phase loss Off	Neutral loss Deactivated
Priority Alarm Phase loss Off Phase sequence Off	Neutral loss Deactivated Out of Range Value Off
Priority Alarm Phase loss Off Phase sequence Off	Neutral loss Deactivated Out of Range Value Off

- In the "*Real time*" page there are 2 folders: Alarm status and electrical values.
- The folder displayed above is the "Alarm status" one.
- Non priority alarms status is shown only if configured. Priority alarms status is always shown: Off, On or deactivated.

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← Real time	
ALARM STATUS	ELECTRICAL VALUES
Priority Alarm	s
Phase loss <mark>On</mark>	Neutral loss Off
Phase sequence On	Measure out of range Off
Outputs	
^{Output1} De-energized	Output2 De-energized
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o On the page bottom the 2 outputs states is displayed



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← R	Real time		
ALARN	M STATUS	ELECTRICA	L VALUES
Last Trigge	gered Alarm		
Pha	ase los	SS	
Non F	Priority /	Alarms	
A1 Volt Off	ltage > 410 V	<pre>/ A2 Voltage < On</pre>	390 V
Priori	rity Alarn	ns	
Phase lo	loss	Neutral loss	
On		Off	

• On the page top the last triggered Alarm is displayed. This will remain until replaced by a new alarm or deleted when DPD is turned OFF.

vodafone IT 💝	9 R] ፤□፤ 흤 ,,, 42% 🕩 08:42
← Real	time	
ALARM STA	TUS E	LECTRICAL VALUES
Voltage	Phase Ph	ase
Read date: 22 No Line type: Tri	v 2017 07:41:47 phase + Neutr	al 230 V
393 V	394 V	395 V
1-2	2-3	9 3-1
Nominal/Act	ual Voltage Di	fference
-	i	- A
-1.3%	-1.0%	-0.8%
		C
\triangleleft	0	

- Tapping on the "Electrical Values" folder the top part of the page displays the Line to Line voltages on the 3 phases.
- Graphs show the deviation from the set line voltage.





dafone IT♥≖ ← Real	ତ N time	JDE 奈, "∥70% 🗩 13:10
ALARM ST	ATUS EL	ECTRICAL VALUES
Voltage	Phase Ne	utral
Read date: 22 No Line type: Tr	ov 2017 12:10:21 iphase + Neutra	al 230 V
231 V	230 V	230 V
1 -N	2 -N	🔵 3-N
Nominal/Act	tual Voltage Dif	iference 0.0%
Voltaria Nautral	Noutral	С

• When the line type is Threephase + Neutral a second set of measurements is displayed with the Line to neutral readings.

lafone IT♥ © ● & @ …	ତ୍ତ 🕅 🛜 ଲା 90% 酠 09:25
ALARM STATUS	ELECTRICAL VALUES
Nominal/Actual Vol	tage Difference
1	
-1.7% -	1.7% 0.4%
Voltage Neutral Neutral	
0 V	
Asimmetry	Frequency
2 %	50.0 Hz
	C

• On the page bottom, Asymmetry and line frequency readings are displayed.







- \circ $\;$ The big filling in the bar graphs indicates anomalies at a glance.
- Positive deviations are on the right side (CW) whilst negative deviations on the left side (CCW)
- The bar filling is proportional up to 30% then it is considered out of range and the bar filling remains the same.

DPD Lock MODEL ID: 2 DPD V2 last version of softwa APPLY EDT total total	odafone IT	@∦₿ዿ奈
MODEL ID: 2 DPD V2 last version of softwa APPLY EDT tertistic te	DPD	Lock
DPD V2 last version of softwa APPLY EDIT	MODEL ID: 2	Unlock
last version of softwa Restore default USA APPLY EDIT	DPD V2	Restore default Europe
APPLY EDIT Credits	last version of softwa	Restore default USA
	APPLY EDIT	Credits
		•

Factory Setting Restoring

• Two different factory defaults are available if necessary to set DPD to original set.





DPD DEFAULT PARAMETERS

DAGE	1750.6	PART NUMBER		
PAGE	ITEM	DPD02DM44	DPD02DM44B	
	LINE TYPE	DELTA	DELTA	
GRID TYPE	RATED LINE VOLTAGE	400VAC	240 VAC	
	POWER ON DELAY	Os	Os	
	ALARM 1	OVERVOLTAGE	OVERVOLTAGE	
	Voltage Value	440VAC	264 VAC	
	Hysteresis	2%	2%	
	Delay ON	Os	Os	
SETDOINTS	Delay OFF	Os	Os	
SLIPOINTS	ALARM 2	UNDERVOLTAGE	UNDERVOLTAGE	
	Voltage Value	360VAC	216 VAC	
	Hysteresis	2%	2%	
	Delay ON	Os	Os	
	Delay OFF	Os	Os	
	PHASE LOSS ENABLE	ON	ON	
	PHASE LOSS THRESHOLD	85%	85%	
PRIORITY ALARMS	NEUTRAL LOSS	NOT ACTIVE	NOT ACTIVE	
	PHASE SEQUENCE ENABLE	ON	ON	
	OUT OF RANGE MEASUREMENT	ON	ON	
OUTPUT 1	ASSIGNMENT	ALARM 1	ALARM 1	
	LOGIC	NORMALLY ENERGIZED	NORMALLY ENERGIZED	
	LOGIC OPERATORS	NONE	NONE	
	ASSIGNMENT	ALARM 2	ALARM 2	
OUTPUT 2	LOGIC	NORMALLY ENERGIZED	NORMALLY ENERGIZED	
	LOGIC OPERATORS	NONE	NONE	

DPD02DM44B settings are in general those commonly used in the USA

