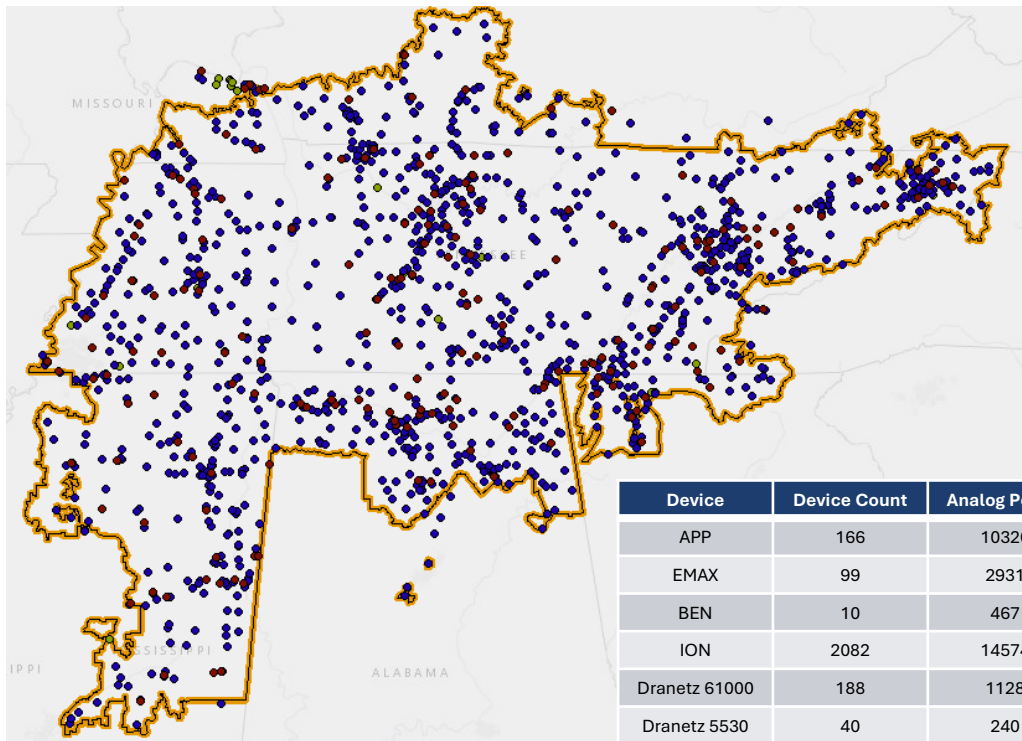

OpenMIC at TVA

PQ Dashboard Users Group
September 10, 2025

Tony Murphy
ammurphy@tva.gov

TVA's Fleet of Devices



Device	Device Count	Analog Points	Digital Points
APP	166	10326	5331
EMAX	99	2931	2016
BEN	10	467	798
ION	2082	14574	0
Dranetz 61000	188	1128	0
Dranetz 5530	40	240	0
Total	2585	29666	8145

APP 601



SEL-735



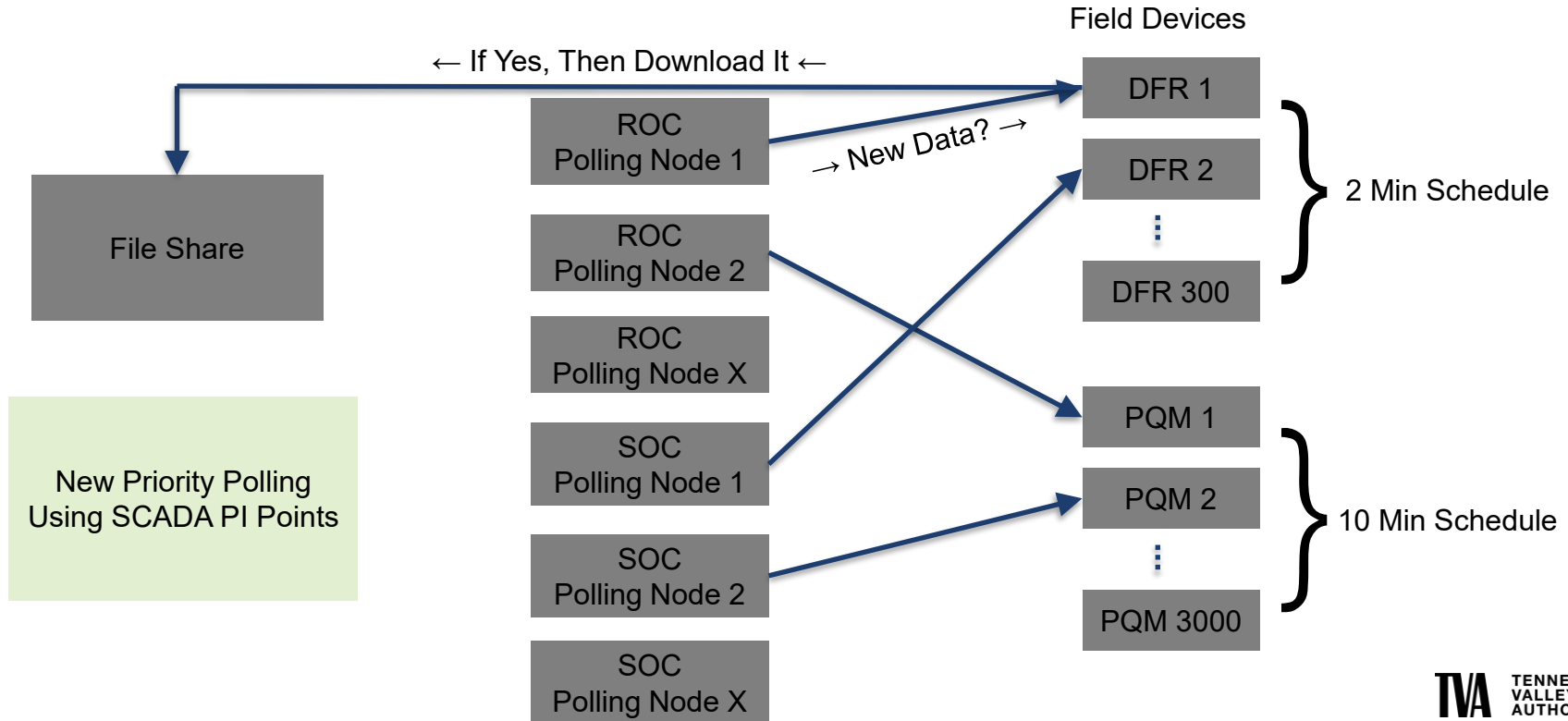
Schneider
ION 8650



Dranetz 61000



OpenMIC – Polling the Fleet



Highlights

Communication Protocols

- FTP
- SFTP
- MODBUS
- DNP3
- Vendor Proprietary (Enterprise Edition)

File Formats

- PQDIF
- COMTRADE
- Plain Text

Supports MFA

Connection Profiles

Name 	Description 	Tasks Clear Sort
APP	APP 501 or 601 DFR or AHM	Edit 9  
BEN	BEN 5000 DFR	Edit 1  
Dranetz 61000	Dranetz 61000 PQM	Edit 2  
EMAX	EMAX Faxtrax DFR	Edit 3  
ION	Schneider ION 8600 or 8650 Meters	Edit 4  
Powerside PQube3	Powerside PQube3 PQM	Edit 3  
SEL-735	SEL-735 PQ Relay	Edit 3  

[⬇ Export CSV](#) [+ Add New](#)

[⏪](#) [⏩](#) 2 of 2 [⏪](#) [⏩](#)

Connection Profiles - Tasks

Name 	File Extensions	Clear Sort
Download Configuration Files	*.ini,R*.par,*.inf	 
Download Diagnostic Files	*.wri,status*.txt	 
Download Event Data	*F????*.cfg, *F????*.d??,*F????*.inf	 
Download Flicker Trend Data	*Fk*.cfg,*Fk*.dat	 
Download Frequency Trend Data	*.cfg,*.dat	 
Download Histogram Data	*.csv	 
Download PQ Trend Data	*Tr*.cfg,*Tr*.dat	 
Download RMS Trend Data	*.cfg,*.dat	 
Download SER	*.csv	 

 Export CSV  Add New

  1 of 1  

Connection Profiles - Tasks

Name:

Download Event Data

File Names or Extensions to Download:

*F????.cfg, *F????.d??, *F????.inf

Remote Path:

/records/

Local Path:

\\ptrxpqfileshare\PowerQuality\DFR\APP

- ☐ Recursively download matching files in all sub-folders
- ☐ Delete remote files after download
- ☒ Limit remote file download by age (30 days)
- ☐ Delete old local files after 365 days
- ☒ Skip download if local file exists and matches remote
- ☐ Archive existing local files before download
- ☐ Overwrite existing local files
- ☒ Synchronize timestamp of local file to remote
- ☐ Send e-mail notification if any files have changed

Schedule Cron Override: [Syntax Help](#)

Task Settings:

FileExtensions="*F????.cfg, *F????.d??, *F????.inf; RemotePath=/records/; LocalPath=\\ptrxpqfileshare\PowerQuality\DFR\APP; LimitRemoteFileDownloadByAge=True; SkipDownloadIfUnchanged=True; MaximumFileSize=50; DirectoryNamingExpression=

External operation application:

Maximum File Size to Download (MB):

50

Maximum Files to Download (-1 = no limit):

-1

Directory Naming Expression:

<DeviceFolderName>\Event

Local Path Authentication User Name:

Local Path Authentication Password:

E-mail Notification Recipients:

Name:

Download Configuration Files

File Names or Extensions to Download:

*.ini, *.R*.par, *.inf

Remote Path:

/setup/

Local Path:

\\ptrxpqfileshare\PowerQuality\DFR\APP

- ☐ Recursively download matching files in all sub-folders
- ☐ Delete remote files after download
- ☐ Limit remote file download by age (30 days)
- ☐ Delete old local files after 365 days
- ☒ Skip download if local file exists and matches remote
- ☒ Archive existing local files before download
- ☐ Overwrite existing local files
- ☒ Synchronize timestamp of local file to remote
- ☒ Send e-mail notification if any files have changed

Schedule Cron Override: [Syntax Help](#)

10,30,50 1 * * *

Task Settings:

FileExtensions="*.ini, *.R*.par, *.inf; RemotePath=/setup/; LocalPath=\\ptrxpqfileshare\PowerQuality\DFR\APP; SkipDownloadIfUnchanged=True; ArchiveExistingFilesBeforeDownload=True; MaximumFileSize=1;

External operation application:

Maximum File Size to Download (MB):

1

Maximum Files to Download (-1 = no limit):

-1

Directory Naming Expression:

<DeviceFolderName>\Config

Local Path Authentication User Name:

Local Path Authentication Password:

E-mail Notification Recipients:

powerquality@tva.gov

Save

Cancel

Save

Cancel

Adding Devices

Devices

Records: 2661

Search					
Status	Acronym	Schedule	Tasks	Enabled	Clear Sort
	ABERDEEN_DISTRICT_MS_13_TOTAL	*/10 ****	<button>Queue Now</button>	☒	 
	ABERDEEN_KY_161_TOTAL	*/10 ****	<button>Queue Now</button>	☒	 
	ACETY_ARC_KY_0.48_TOTAL	*/10 ****	<button>Queue Now</button>	☒	 
	ACKERMAN_CC	*/2 ****	<button>Queue Now</button>	☒	 
	ACKERMAN_MS_161_TOTAL	*/10 ****	<button>Queue Now</button>	☒	 
	ADAIRVILLE_KY_13_T1	*/10 ****	<button>Queue Now</button>	☒	 
	ADAIRVILLE_KY_13_T2	*/10 ****	<button>Queue Now</button>	☒	 
	ADAIRVILLE_KY_13_T3	*/10 ****	<button>Queue Now</button>	☒	 
	ADAMS_TN_25_T1	*/10 ****	<button>Queue Now</button>	☒	 
	ADAMS_TN_25_T2	*/10 ****	<button>Queue Now</button>	☒	 
	ADAMSVILLE_TN_13_TOTAL	*/10 ****	<button>Queue Now</button>	☒	 
	ADATON_MS_13_TOTAL	*/10 ****	<button>Queue Now</button>	☒	 
	ADDISON_AL_25_T1	*/10 ****	<button>Queue Now</button>	☒	 
			Export CSV	+ Add New	
			1 of 205		

Adding Devices

Acronym:

CHARLESTON_TN

Name:

Charleston TN

Target Folder Name (leave blank to use Acronym):

Charleston TN

FTP Type:

FTP: Standard File Transfer Protocol

Connection Host Name/IP [:port]:

10.2.12.136

Connection User Name:

anonymous

Connection Password:

Connection Timeout:

30000

Connection Profile: [Edit Connection Profiles](#)

APP

Schedule Cron: [Syntax Help](#)

/ * * *

Connection String:

ftpType=0; connectionHostName=10.2.12.136; connectionUserName=anonymous; connectionPassword=anonymous; connectionProfileID=1; schedule=/*/* * * *; useDialUp=false; dialUpEntryName=; dialUpNumber=; dialUpUserName=;

☐ Use Dial-up Connection

Dial-up RAS Connection Entry Name:

Dial-up Phone Number:

Dial-up User Name:

Dial-up Password:

Maximum Dial-up Retries:

3

Dial-up Connection Timeout:

90

Company:

Tennessee Valley Authority

Vendor Device:

APP-601

☐ Log Detailed Connection Messages

☒ Enabled

Save

Cancel

Status Screen

Status

Records: 2448

Search	Q
ABERDEEN_DISTRICT_MS_13_TOTAL: [:@ROCPPQMIC02.TRX.TVA] 2 Files Downloaded (46 Total)	
ABERDEEN_KY_161_TOTAL	
ACETY_ARC_KY_0_48_TOTAL: [:@ROCPPQMIC03.trx.tva] 0 Files Downloaded (0 Total)	
ACKERMAN_CC: [:@SOCPPQMIC03.TRX.TVA] 4 Files Downloaded (470 Total)	
ACKERMAN_MS_161_TOTAL	
ADAIRVILLE_KY_13_T1: [:@ROCPPQMIC02.TRX.TVA] 1 Files Downloaded (39 Total)	
ADAIRVILLE_KY_13_T2: [:@ROCPPQMIC03.trx.tva] 2 Files Downloaded (10 Total)	
ADAIRVILLE_KY_13_T3: [:@ROCPPQMIC02.TRX.TVA] 0 Files Downloaded (51 Total)	
ADAMS_TN_25_T1	
ADAMS_TN_25_T2: [:@ROCPPQMIC02.TRX.TVA] 2 Files Downloaded (40 Total)	
ADAMSVILLE_TN_13_TOTAL	
ADATON_MS_13_TOTAL	
ADDISON_AL_25_T1: [:@ROCPPQMIC02.TRX.TVA] 1 Files Downloaded (53 Total)	
ADDISON_AL_25_T2: [:@ROCPPQMIC02.TRX.TVA] 0 Files Downloaded (48 Total)	
ADVANTAGE_TN_13_TOTAL: [:@SOCPPQMIC02.TRX.TVA] 2 Files Downloaded (40 Total)	
AE_STALEY_TN_13_T1: [:@SOCPPQMIC02.TRX.TVA] 2 Files Downloaded (44 Total)	
AE_STALEY_TN_13_T2	
ARDMORE_AL: [:@ROCPPQMIC03.trx.tva] 0 Files Downloaded (0 Total)	
ATHENS_AL	

Not Queued

Queued but Waiting

Actively Downloading

Complete with Partial Success

Complete with Failure

Complete with Full Success

Status Screen – Logs

ACETY_ARC_KY_0.48_TOTAL: [@ROCPPQMIC03.trx.tva] 0 Files Downloaded (0 Total)

[2025-09-06 15:14:27.922] Executing task "Download Config Registers"...

[2025-09-06 15:14:27.922] Executing external operation command "D:\Apps\IONDownloader\IONDownloader.exe --IONConnectionString "server=10.22.42.194:7700; user=USER04; password=[REDACTED] --destinationfolder "\\ptrxpqfileshare\PowerQuality\PQM\ION\Acety-Arc KY 0.48-Total\Config" --downloadEventData False --DownloadTrendingData False --DownloadConfigData True --DeviceAcronym ACETY_ARC_KY_0.48_TOTAL --logfullstacktrace true --ConfigFileNamingExpression Config.ini"...

[2025-09-06 15:14:51.042] Failed while attempting connection to "tcp://10.22.42.194:7700": A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.

[2025-09-06 15:15:10.665] IONDownloader failed: System.InvalidOperationException: Failed while attempting connection to "tcp://10.22.42.194:7700": A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.

[2025-09-06 15:15:10.665] ---> System.Net.Sockets.SocketException (10060): A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.

[2025-09-06 15:15:10.665] at Gemstone.Communication.TcpClient.ProcessConnect(ConnectState connectState)

[2025-09-06 15:15:10.665] --- End of inner exception stack trace ---

[2025-09-06 15:15:10.665] at IONDownloader.EventLog.EventLogPoller.PollAsync()

[2025-09-06 15:15:10.665] at IONDownloader.Program.Main(String[] args)

[2025-09-06 15:15:10.665] External action complete: exit code 0.

0%

100%

Queue Processing...

File Share

☐ Name ^	Date modified	Type
 Config	3/25/2025 3:49 PM	File folder
 Diagnostic	4/13/2023 1:21 PM	File folder
 Event	9/5/2025 7:40 AM	File folder
 Flicker Trend	9/6/2025 5:56 AM	File folder
 Frequency Trend	9/6/2025 5:56 AM	File folder
 Histogram Data	4/13/2023 1:26 PM	File folder
 PQ Trend	9/6/2025 5:56 AM	File folder
 RMS Trend	9/6/2025 5:56 AM	File folder
 SER	9/6/2025 5:56 AM	File folder

Config

- Plain Text Files (.ini, .inf, .par, .txt, etc.)

Diagnostic

- Plain Text Files (.txt, .wri, .log, etc.)

Event

- PQDIF
- COMTRADE
- Native (.rcd, .cev, .eve, etc.)

Trend

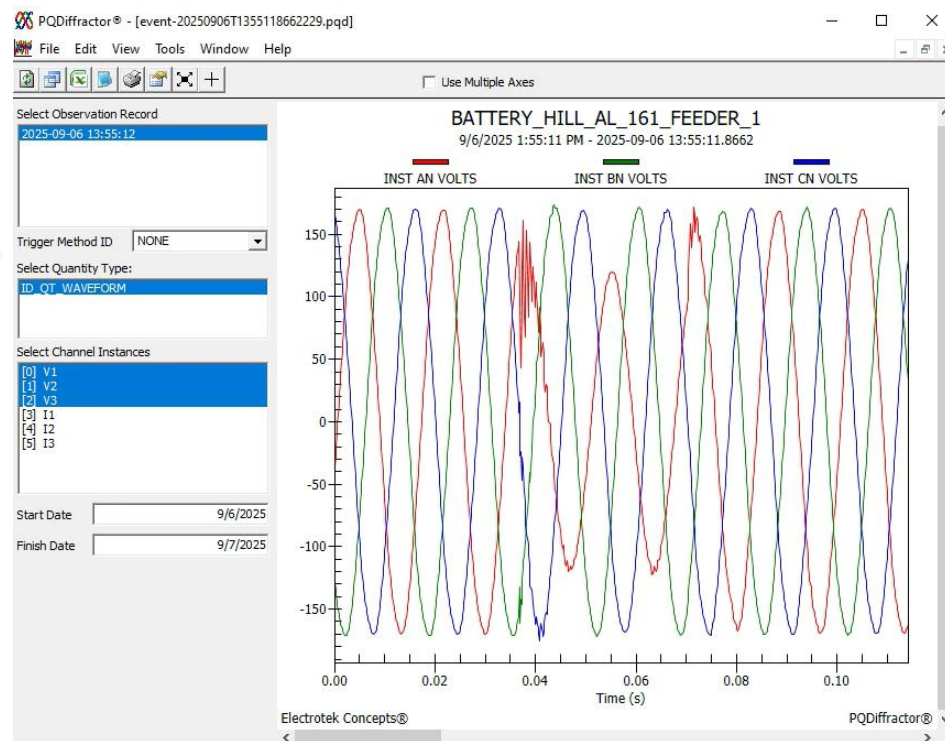
- PQDIF
- COMTRADE
- Native (.ldp, etc.)

SER

- CSV
- Plain Text (.ser, .txt, etc.)

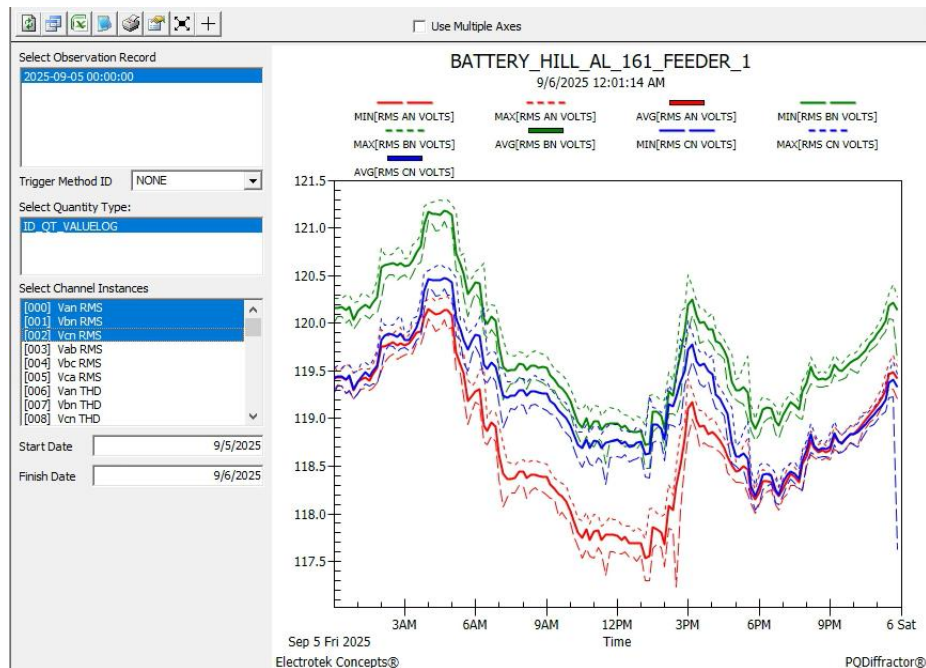
Example PQDIF Files - Events

Name	Date modified	Type	Size
Archive	8/3/2025 5:09 AM	File folder	
event-20250607T2055522296490.pqd	6/7/2025 5:00 PM	Power Quality Data	42 KB
event-20250716T2021366640990.pqd	7/16/2025 4:41 PM	Power Quality Data	43 KB
event-20250721T2023598494230.pqd	7/21/2025 4:32 PM	Power Quality Data	42 KB
event-20250722T0900076801569.pqd	7/22/2025 5:01 AM	Power Quality Data	42 KB
event-20250731T2030336824749.pqd	8/1/2025 1:41 PM	Power Quality Data	41 KB
event-20250813T1218463772099.pqd	8/13/2025 8:21 AM	Power Quality Data	43 KB
event-20250906T1355118662229.pqd	9/6/2025 10:01 AM	Power Quality Data	40 KB



Example PQDIF Files – Daily Trends

Name	Date modified	Type	Size
trend-20250906.pqd	9/6/2025 11:51 AM	Power Quality Data	114 KB
trend-20250905.pqd	9/5/2025 8:01 PM	Power Quality Data	161 KB
trend-20250904.pqd	9/4/2025 8:00 PM	Power Quality Data	161 KB
trend-20250903.pqd	9/4/2025 1:53 PM	Power Quality Data	164 KB
trend-20250902.pqd	9/2/2025 8:01 PM	Power Quality Data	166 KB
trend-20250901.pqd	9/1/2025 8:01 PM	Power Quality Data	171 KB
trend-20250831.pqd	8/31/2025 8:00 PM	Power Quality Data	171 KB
trend-20250830.pqd	8/30/2025 8:01 PM	Power Quality Data	171 KB
trend-20250829.pqd	8/29/2025 8:01 PM	Power Quality Data	164 KB
trend-20250828.pqd	8/28/2025 8:00 PM	Power Quality Data	165 KB
trend-20250827.pqd	8/27/2025 8:00 PM	Power Quality Data	165 KB
trend-20250826.pqd	8/26/2025 8:01 PM	Power Quality Data	165 KB
trend-20250825.pqd	8/25/2025 8:00 PM	Power Quality Data	164 KB
trend-20250824.pqd	8/24/2025 8:01 PM	Power Quality Data	170 KB



Email Notifications

OpenMIC Johnsonville FP 161 DFR1 problems ...

PP

PowerQuality Production <powerquality@tva.gov>
To: Power Quality

😊

↩ Reply

↩ Reply All

➡ Forward

📧

⋮

Wed 9/3/2025 7:19 PM

Johnsonville FP 161 DFR1 has been disabled due to excessive downloads (204 files in the last 24 hours).

ID	DeviceID	LastDownloadedFileID	LastOutcome	LastRun	LastFailure	LastErrorMessage	LastDownloadStartTime	LastDownloadEndTime	LastDownloadFileCount
246	260	20324056	PartialSuccess	2025-09-03 22:36:25.2040632	2025-09-03 23:19:23.6183000	Cannot change directory to /records/HistogramData/.	2025-09-03 22:08:35.2057873	2025-09-03 22:36:25.2530731	148

OpenMIC Anderson TN problems ...

PQ

PowerQuality Production <powerquality@tva.gov>
To: Power Quality

😊

↩ Reply

↩ Reply All

➡ Forward

📧

⋮

Mon 8/25/2025 2:35 AM

Anderson TN has produced a record that is too large.

ID	DeviceID	LastDownloadedFileID	LastOutcome	LastRun	LastFailure	LastErrorMessage	LastDownloadStartTime	LastDownloadEndTime	LastDownloadFileCount
355	1366	17501105	PartialSuccess	2025-08-25 06:26:23.5271687	2025-08-25 06:35:25.1384788	Local file already exists and settings do not allow overwrite.	2025-08-25 06:24:07.1193121	2025-08-25 06:26:23.5725190	8

OpenMIC Gleason CT problems ...

PQ

PowerQuality Production <powerquality@tva.gov>
To: Power Quality

😊

↩ Reply

↩ Reply All

➡ Forward

📧

⋮

Fri 5/2/2025 9:39 AM

Gleason CT has not had a successful connection in 25 hours. The meter may require attention.

ID	DeviceID	LastDownloadedFileID	LastOutcome	LastRun	LastFailure	LastErrorMessage	LastDownloadStartTime	LastDownloadEndTime	LastDownloadFileCount
374	1385	251877247	PartialSuccess	2025-05-01 12:29:54.6062904	2025-05-02 13:39:11.9092344	Cannot change directory to /records/HistogramData/.	2025-05-01 12:27:26.2757410	2025-05-01 12:29:54.6612849	67

Realtime Displays

Voltage Readings

Description	AN	BN	CN	NG	AB	BC	CA	S1	S2	S0
Voltage Magnitude (Volts)	95,015.09	95,688.55	94,826.00	0.16	164,913.00	165,157.05	164,423.09	95,150.66	414.06	115.31
Voltage Angle (Degrees)	0.01	-120.16	119.69	-159.87	29.96	-90.38	149.94			

Current Readings

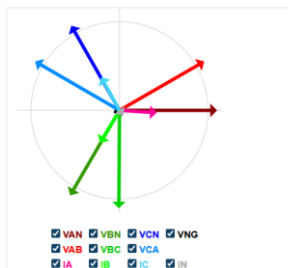
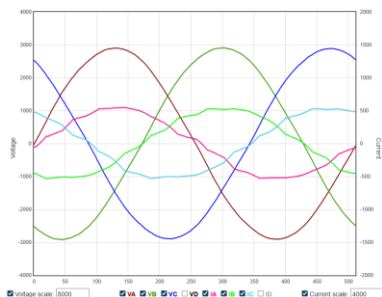
Description	AN	BN	CN	NG	Res	Net	S1	S2	S0
Current Magnitude (Amps)	124.18	126.78	126.48	0.00	6.24	6.89	125.80	2.05	2.13
Current Angle (Degrees)	-3.55	-120.80	119.00	-53.72					

Frequency Reading

Frequency (Hz)	60.00
----------------	-------

Power Readings

Description	AN	BN	CN	Total
Active Power (Watts)	11,746,615.00	12,104,123.00	11,962,906.00	35,813,644.00
Reactive Power (VAR)	729,221.00	133,875.64	144,405.02	1,007,501.63
Apparent Power (VA)	11,789,175.00	12,118,615.00	11,979,088.00	35,886,880.00
True Power Factor (%)	1.00	1.00	1.00	1.00
Displacement PF (%)	1.00	1.00	1.00	1.00



	Magnitude	Angle
VAN (Volts)	94,954.09	0.00°
VBN (Volts)	95,618.94	-120.16°
VCN (Volts)	94,761.05	119.68°
VNG (Volts)	0.16	-159.56°
VAB (Volts)	164,805.13	29.96°
VBC (Volts)	165,033.56	-90.38°
VCA (Volts)	164,315.78	149.93°
IA (Amps)	124.38	-3.62°
IB (Amps)	126.91	-120.88°
IC (Amps)	126.65	118.88°
IN (Amps)	0.00	-53.43°

Unbalance Readings

Description	LNmax	LLmax	S2/S1	S0/S1
Voltage Unbalance (%)	0.54	0.54	0.44	0.12
Current Unbalance (%)	1.28		1.63	1.70

Flicker Readings

Description	AN	BN	CN
Pst (p.u.)	0.05	0.09	0.09
Plt (p.u.)	0.23	0.09	0.09

Harmonics Readings

Description	AN	BN	CN	NG
Voltage THD (% Fund)	0.98	0.88	1.02	7.82
Voltage TID (% Fund)	0.03	0.04	0.04	9.21
Voltage Harmonic RMS (Volts)	927.12	841.68	967.84	0.01
Voltage Interharmonic RMS (Volts)	31.08	40.31	39.03	0.01
Voltage TIF (% Fund)	10.87	11.46	10.14	
Voltage TIF (% RMS)	10.87	11.46	10.14	
Voltage Crest Factor (%)	1.41	1.42	1.42	
Current THD (% Fund)	5.84	4.72	5.00	32.56
Current TID (% Fund)	0.15	0.15	0.15	15.62
Current Harmonic RMS (Amps)	7.25	5.99	6.32	0.00
Current Interharmonic RMS (Amps)	0.18	0.18	0.19	0.00
Current IT Product (%)	0.00	0.00	0.00	0.00
Current Crest Factor (%)	1.47	1.41	1.41	4.14
K Factor (%)	1.25	1.20	1.19	



TENNESSEE
VALLEY
AUTHORITY