# 😚 MASHHAD TADBIR



Measure, Display and Store	
	Line
Voltage*	Phase
	Average
	Unbalance
	Line
Current	Average
	Neutral
	Unbalance
	Phase
Active Power	Total
	Phase
Reactive Power Apparent Power	Total
	Phase
	Total
Power Factor	t
Harmonic*	2 to 15 <sup>st</sup> Line Voltage
Even, Odd	2 to 15 <sup>st</sup> Line Voltage
	2 to 15 <sup>st</sup> Line Voltage
Total Harmonic Distortion*	Line Voltage (W1020 only)
	Line Current (W1020 only)
Tomporaturo**	Transformer
Temperature**	Ambient
Frequency	
Current Ranges	
CT up to 5000A	
Data Logging	
Records	1 minute to 1 hour period
Communication	
Communication	MODBUS protocol
Communication Offload stored data on USB flash disk Two RS485**	
Communication Offload stored data on USB flash disk Two RS485** WiFi Module	MODBUS protocol
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply	MODBUS protocol Internal Communication
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range	MODBUS protocol
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Communication Offload stored data on USB flash disk Two R\$485** WiFi Module Power Supply Wide Range & Other Features	MODBUS protocol Internal Communication
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Other Features Expandable to 16 feeders	MODBUS protocol Internal Communication
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Other Features Expandable to 16 feeders Current unbalance alarm LED	MODBUS protocol Internal Communication
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory	MODBUS protocol Internal Communication
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction	MODBUS protocol Internal Communication 30-500VAC 4 GB
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI*	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key IEC62053-22, IEC62053-24
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement EMC	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement EMC	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key IEC62053-22, IEC62053-24 IEC61439-1, IEC62271-1
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement EMC Mechanical Parameters Dimensions	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key IEC62053-22, IEC62053-24 IEC61439-1, IEC62271-1 145x90x72mm
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement EMC	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key IEC62053-22, IEC62053-24 IEC61439-1, IEC62271-1 145x90x72mm DIN rail
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Mechanical Parameters Dimensions Mounting	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key IEC62053-22, IEC62053-24 IEC61439-1, IEC62271-1 145x90x72mm DIN rail 565 gr **
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range & Cher Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement EMC Mechanical Parameters Dimensions Mounting Weight	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key IEC62053-22, IEC62053-24 IEC61439-1, IEC62271-1 145x90x72mm DIN rail
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement EMC Mechanical Parameters Dimensions Mounting Weight Environmental Conditions	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key IEC62053-22, IEC62053-24 IEC61439-1, IEC62271-1 145x90x72mm DIN rail 565 gr ** 455 gr ***
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement EMC Mechanical Parameters Dimensions Mounting Weight Environmental Conditions Operating Temperature	MODBUS protocol           Internal Communication           30-500VAC           4 GB           2*16 text LCD           6 Key           IEC62053-22, IEC62053-24           IEC61439-1, IEC62271-1           145x90x72mm           DIN rail           565 gr **           455 gr ***           -20 to 70 °C
Communication Offload stored data on USB flash disk Two RS485** WiFi Module Power Supply Wide Range Other Features Expandable to 16 feeders Current unbalance alarm LED Fault CT polarity correction Memory HMI* 1000 impulse/kwh Energy pulse Daylight saving Software correction Standards Measurement EMC Mechanical Parameters Dimensions Mounting Weight Environmental Conditions	MODBUS protocol Internal Communication 30-500VAC 4 GB 2*16 text LCD 6 Key IEC62053-22, IEC62053-24 IEC61439-1, IEC62271-1 145x90x72mm DIN rail 565 gr ** 455 gr ***

\* Only main Channel on W1030 \*\* W1020 \*\*\* W1024

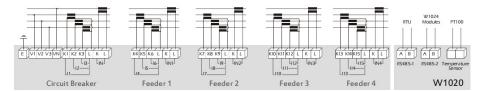
### Multi-Feeder Power Analyzer (CT/split core CT)

W1020 is a powerful power analyzer which is able to measure and record the electrical parameters of the circuit breaker and 4 connected feeders. The numbers of feeders are expandable to 16 feeders using W1024 modules.

While having the ability to measure and record voltage, current, neutral current, power factor, active, reactive and apparent powers, active and reactive energies for all the feeders, this device can measure and record 2<sup>nd</sup> to 15<sup>th</sup> voltage, current and neutral current harmonics, voltages THD and Currents THD for the circuit breaker. Also recording both the environmental temperature and transformer temperature would help to monitor and analyze the effect of harmonic loads.

All the records are stored in the internal memory and transferred to the server using internet.

The measured parameters which are transferred to the server by mobile networks make the charts and the data available to be monitored in order to calculate the loss reduction, load balance, load profile, PF correction and etc.



### Data gathering and recording system General specification Gathering the transferred data from the device and recording in the SQL server database

- Display and managing the general information of each device containing name, code, address and etc. while distinguishing the station and feeder Applicable filtering to display the desired stations
- Display the records received for each station and it's feeders Export Excel files from the records of each station and it's feeders
- Export screen shots of the analyses in order to be used in the reports Display the profile of all parameters for each station and it's feeders
- Display the profile of max, min and average of all parameters for each station and it's feeders
- Define access level for different users Using Web Method and RESTful in order to receive data from the website Web Hook capability
- Responsive design Compatible with all modern web browsers Data analysis by the software
- Operation factor Load factor Capacitor calculation Unbalance calculation
- Load profile Peak time
- Total load of selected devices

## ... Capability to make alarms by the website Station blackout alarm

- Fuse burning alarm
- Overload alarm

- Simcard credit balance alarm
- Customize alarms



- Current harmonic alarm
- Transformer overheat alarm