

Data Collection and Communication Device

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M . D . T

Data Collection and Communication Device



MCU	SAMD21 Cortex®-M0+ 32
RF Modules	u-blox NINA-W102
WIFI	IEEE 802.11b/g/n

BAND SUPPORT

Station mode	2.4 GHz, channel 1-13*
Access Point mode	2.4 GHz, channel 1-13*
Typical conducted output power	15 dBm
Typical radiated output power	18 dBm EIRP
Conducted sensitivity	-96 dBm

DATA RATES

IEEE 802.11b	1 / 2 / 5.5 / 11 Mbit/s
IEEE 802.11g	6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbit/s
IEEE 802.11n	MCS 0-7, HT20 (6.5-72 Mbit/s)

COMMUNICATION

Band	FDD-LTE B1 / B3 / B5 / B8 / B20 / B28 Uplink ≤ 62.5Kbps Downlink ≤ 26.15Kbps
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NB-IOT SIM7020E

Supports communication protocols such as LWM2M/COAP/MQTT/TCP/UDP/HTTP/HTTPS, etc.

Breakout UART control pins, to connect with host boards like Arduino/STM32.

SIM card slot, supports NB-IoT specific card.

BAUDRATE 300bps~921600bps (115200bps by default).

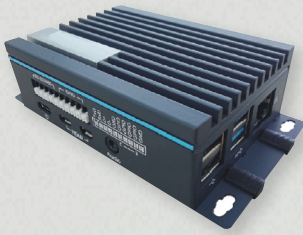
POWER 5V

M . D . T

Data Collection and Communication Device



- a. Low energy consumption and the installation completed in 5 minutes with no extra APP installation.
- b. Appearance can be personalized depending on the indoor and outdoor environment or the preference of the customer.
- c. It can be Compatible with 4G SIM cards from different telecom companies for online communication.
- d. It can be connected with multiple RS 485 communication protocol devices to transmit synchronization information to the remote server. With various customized remote CMS, it can synchronously collect data, error messages, and analysis.
- e. It can connect to a remote server with any computer (Microsoft, Linux) and cell phone (IOS, Android) system.



M . D . T

Raspberry Pi 4 Model B (Pi4B) EI-U220

Processor	Broadcom BCM2711, quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz	
Memory	2G / 4G / 8G	
Connectivity	2.4 GHz and 5.0 GHz IEEE 802.11b/g/n/ac wireless LAN Bluetooth 5.0, BLE Gigabit Ethernet 2 × USB 3.0 ports 2 × USB 2.0 ports	
GPIO	Standard 40-pin GPIO header	
Video & Sound	2 × micro HDMI ports (up to 4Kp60 supported) 2-lane MIPI DSI display port 2-lane MIPI CSI camera port 4-pole stereo audio and composite video port	
Multimedia	H.265 (4Kp60 decode); H.264 (1080p60 decode, 1080p30 encode); OpenGL ES, 3.0 graphics	
SD card support	Micro SD card slot for loading operating system and data	
Input power	5V DC via USB-C connector (minimum 3A1) 5V DC via GPIO header (minimum 3A1) Power over Ethernet (PoE)-enabled (requires separate PoE) 5V 3A Power Input	
I/O Interfaces	Serial Ports	1 x RS-232/485 (Terminal Block)
	GPIO	
System Hardware	Watchdog Timer	Programmable 255 level timer interval (1 ~ 255 sec.)
	Hardware Security	TPM 2.0 (available upon request)
	Storage	1 x Micro SD slot (dummy) (internal 8 GB SD card interchangeable with Raspberry Pi 4)
General	Certification	CE, FCC
	Dimensions (W x D x H)	125 x 70 x 35 mm
	Form Factor	Micro
	Enclosure	Aluminum housing
	Mount Options	Wall mount, DIN rail (optional)
	Weight (Net)	0.5 kg (1.10 lbs)
	Power Consumption	15 W (typical)
	OS Support	AdvRaspbian

RENTAL DISCOUNT

For Regular Customers



DATA COLLECTION
AND COMMUNICATION DEVICE

Chipset Rental with lifetime warranty

Device price only

\$386

Two-year warranty

01

Lifetime warranty

Rental collocation plan option 1
SINGLE DEVICE SOLUTION

PLAN 1

\$ 18 / month

PLAN 2

\$ 200 / year

02

Lifetime warranty

Rental collocation plan option 2
AIO MONITORING SYSTEM SOLUTION

PLAN 1

\$ 22 / month

PLAN 2

\$ 256 / year

AIO [ALL IN ONE]

Full hardware and software solutions (chipset device/communication SIM card/remote cloud space)

APPLICATION DOMAIN

Furnace tube energy saving monitoring system



1. Connect the signal transmitters of each device (instrument) in series



2. Upload data synchronously via M.D.T



節能管理系統			
Scrubber Status	Normal	Normal	
Main Tool	FT01	FT02	[C]瓦斯費用 10 / kl
Abatement	FT01	FT02	[D1]持續時間 16D 7H 20M
Normal Mode	[A1] 30 slm	[A2] 44 slm	[D2]持續時間 17D 8H 51M
Green Mode	[B1] 5 slm	[B2] 5 slm	[E1]H1-B1*01 節省流量 587000 sl
			[E2]H2-B2*02 節省流量 975429 sl
			[F1]H1-C1*000 節省費用 5870
			[F2]H2-C2*000 節省費用 9754

4. The remote control (situation room) shows various synchronous analysis reports and abnormal alarms.

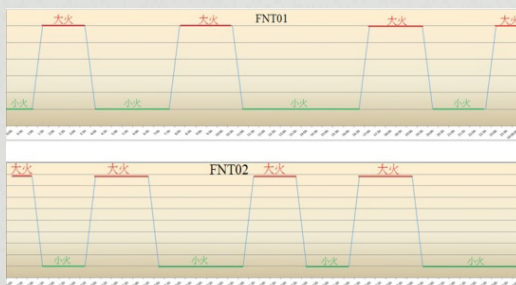


Computer / screen / Mobile phone

Host server



3. Storing data and synchronous computing analysis



Analysis of the time point and condition of energy saving in the two equipment processes.



The alarm can be used to analyze whether the manufacturer's maintenance is indeed done or overtime.

APPLICATION DOMAIN

Solar power cloud monitoring system



1. Connect the signal transmitters of each inverter in series

2. Upload data synchronously via M.D.T



4. The remote control (situation room) shows various synchronous analysis reports and abnormal alarms



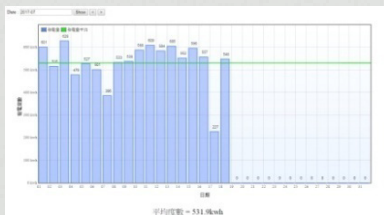
Computer / screen / Mobile phone

Host server



3. Storing data and synchronous computing analysis

Single group statistics



Daily power generation

編號	地點	字樣量	即時發電量	今日發電	日發電效率	累積發電	累積次數	累積平均發電效率	告警圖
A073006101	臺科公電樓1F	4.725	0 kw	0度	0	35600度	2087天	3.81	
A073006102	臺科公電樓2F	7.285	1.201 kw	26.6度	3.65	5117度	208天	3.41	
A073006103	臺科公電樓3F	7.285	1.159 kw	26.1度	3.58	4895度	195天	3.39	
A073006104	臺科公電樓4F	7.285	1.174 kw	26.3度	3.61	5113度	206天	3.41	
A073006105	臺科公電樓5F	4.62	0.773 kw	17.1度	3.7	3624度	231天	3.4	
A073006201	台中工業銀行	9.92	9.665 kw	37.7度	3.6	13908度	392天	3.58	
A073006202	台中神農少學	16.6	17.475 kw	62度	3.53	16408度	273天	3.23	
A073006301	電線局電科1F	13.92	11.971 kw	55.1度	3.96	30047度	591天	3.65	

Multi-group cross comparison statistics



Monthly power generation

Error message notification via mail or LINE

APPLICATION DOMAIN

3D Gauss Analyzer



1. Connect the signal transmitters of each instrument in series

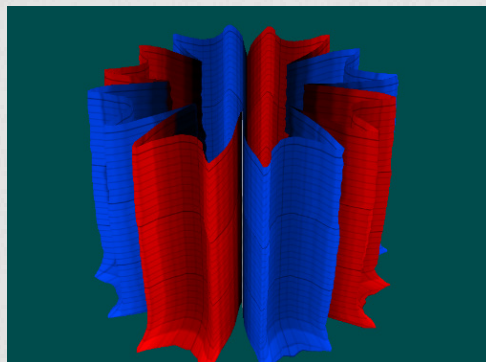


2. Upload data synchronously via M.D.T

Host server



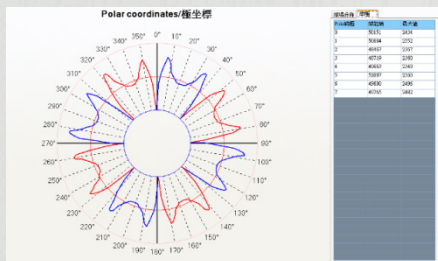
3. Storing data and synchronous computing analysis



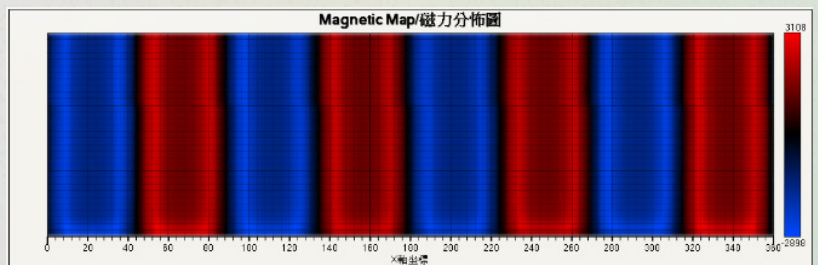
3D Graphics



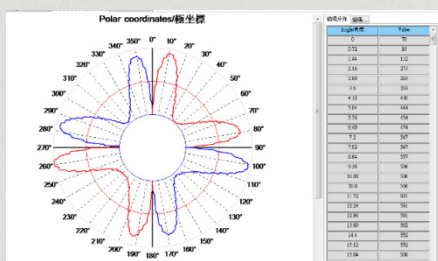
Computer / screen / Mobile phone



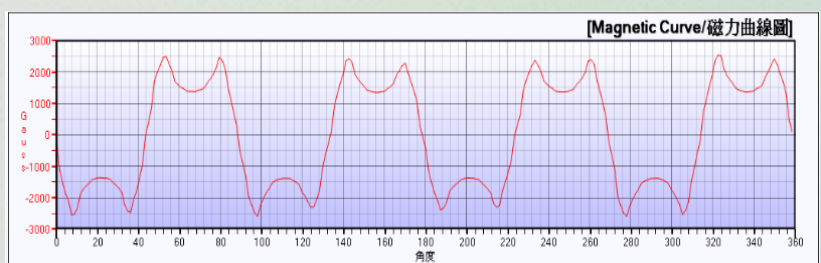
Polar coordinates (magnetic pole)



Magnetic Map



Polar coordinates (magnetic field distribution)



Magnetic Curve

APPLICATION DOMAIN

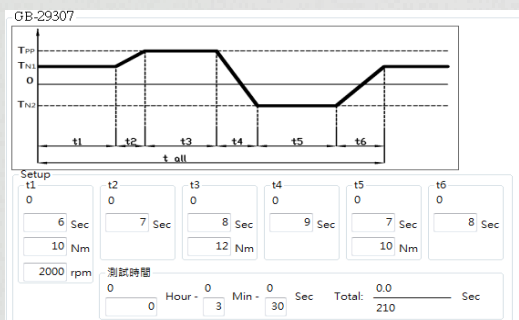
Motor test system



1. Connect the signal transmitters of each system in serie

2. Measure with various measuring instrument

3. Upload data synchronously via M.D.T



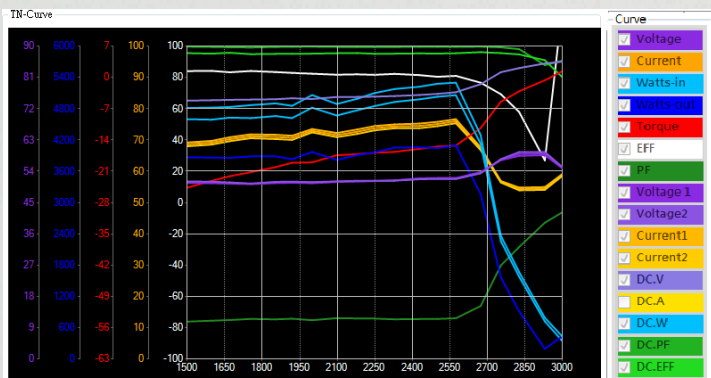
Host server



5. The remote control (situation room) shows various synchronous analysis reports and abnormal alarms

Computer / screen / Mobile phone

4. Storing data and synchronous computing analysis



APPLICATION DOMAIN

Micro-hydro power generation real-time monitoring system



1. Connect the signal transmitters of each devices (or meters) in series

2. Upload data synchronously via M.D.T



Plant site monitoring system screen display



Computer / screen / Mobile phone

Host server



3. Storing data and synchronous computing analysis

HYDROPOWER												
033												
Three Phase Meter												
序電壓	VC 相電壓	平均相電壓	UAB 相電壓	UBC 相電壓	UCA 相電壓	平均線電壓	IA 電流	IB 電流	IC 電流	平均電流	總有功功率	總有功電量
0	0	208.7	210.2	209.9	211	1.821	1.820	1.844	1.862	630	1.6	
0	0	210.5	211	210.7	209.2	1.768	1.691	1.714	1.806	554	1.6	
0	0	210.4	210.9	210.5	210.3	1.862	1.889	1.902	1.871	633	1.6	
0	0	208.7	209.2	208.9	205.1	1.839	1.744	1.769	1.769	576	1.6	
0	0	210.8	211.3	211	204.3	2.028	1.994	1.948	1.729	644	1.6	
0	0	209.4	210.1	209.4	207.8	1.798	1.690	1.712	1.727	580	1.7	
0	0	209	209.5	208.9	208.7	1.790	1.694	1.716	1.779	587	1.7	
0	0	208.2	208.7	208.3	209.4	1.806	1.810	1.828	1.821	586	1.7	
0	0	208.9	209.4	208.9	209.0	1.819	1.725	1.748	1.732	600	1.7	
0	0	209.4	209.9	209.5	209.0	1.804	1.763	1.782	1.899	638	1.7	

Inquiry and download of each plant's data

meter_three_phase	
column	value
id	45224
projectId	3
phase Volt_A	0
phase Volt_B	0
phase Volt_C	0
line Volt_A	287.5
line Volt_B	288.1
line Volt_C	287.5
current_A	0
current_B	0
current_C	0
average Phase Volt	0
average line Volt	293
average Current	0
total Effective Power	0
total Active Energy	1.8
createTime	2020-12-23 15:28:19

meter_single_phase	
column	value
id	43767
projectId	3
id	511
phase Volt	0
line Volt	0

Synchronous comparison of single equipment data in each plant

APPLICATION DOMAIN

PG (generator) + E.S.B. (Energy Storage box)

Horsepower + continuous driving force + AIoT Matching application

1. Power and energy capacity matching (P.G.+E.S.B.)



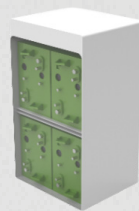
PG (Generator)
 ※ With 1.38 kWh
 ※ Low noise
 ※ No air pollution

+



E.S.B.
 Capacity: 2.76kWh

/



E.S.B.
 Capacity: 5.52kWh

/



E.S.B.
 Capacity: 5.52kWh



Host server



Computer / screen / Mobile phone

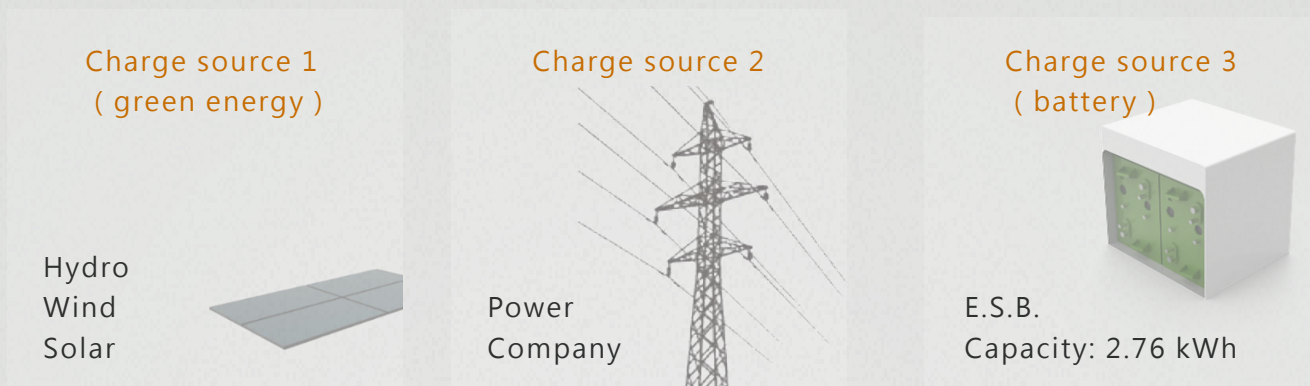


4. Storing data and synchronous computing analysis

5. The remote control (situation room) shows various synchronous analysis reports and abnormal alarms.

APPLICATION DOMAIN

PG (generator) + E.S.B. (Energy Storage box)
 Charging and discharging matching and AIoT application
 (Water level monitoring project planning)



1. Continuous and stable power supply to the equipment in the plant



PG (Generator)
 ※ With 1.38 kWh
 ※ Low noise
 ※ No air pollution



Ultrasonic water level gauge
 Power consumption : 7W

Water level meter
 Power consumption : 10W

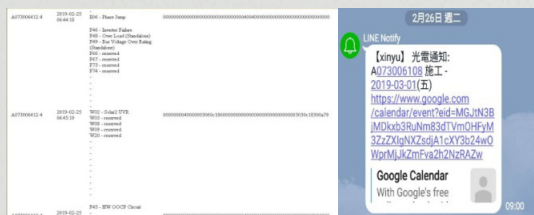


Power consumption : 12W
 (RS485 communication protocol)

Host server



Computer / screen / Mobile phone



Error messages are notified by E-mail or LINE App.

4. The remote control (situation room) shows various synchronous analysis reports and abnormal alarms

3. Storing data and synchronous computing analysis

CUSTOMIZED MONITORING SYSTEM

HUEY GUWO Technology [Solar Energy Storage System]

日直條圖 | 月直條圖


| 惠國科技

A073031261

PV 裝置量 : 4.950 kW

電池容量 : 10.560 kWh

系統啟動日 : 2022-06-13

光電 儲能 監控系統



累積節能
5967.5 kwh



市電
21081.3 kwh





負載
27048.8 kwh



累積節省
\$23,870.0

XINYU Development
Today's resource for a brighter tomorrow

信宇開發監控系統



CUSTOMIZED MONITORING SYSTEM


Changhua Fangyuan [Solar Energy Monitoring System]

2356 Days

彰化芳苑宏恩

64.96 KW 太陽能光電監控系統

今日高峰 12:10 50.598 kw	歷史新高 2017-07-03 412.00 kwh	即時發電量 0.00 kw	今日度數 342 度	累積度數 555124 度	累積減碳量 353058.86 kg
掛錶日 2017-03-16	單價 4.8111(元/度)				



1645.4 今日收入
2670757.1 累積收入


現場一隅
多晶太陽能板290w*224片

© XINYU Development | 漢宇開發 監控系統

2356 Days

彰化芳苑宏恩

64.96 KW 太陽能光電監控系統




A073006502

案場空拍影片

—

Today's' resource for a brighter tomorrow



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Watch on YouTube

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CUSTOMIZED MONITORING SYSTEM

XINYU [Energy-Saving Monitoring System]



The logo features the text "XINYU" in a large, bold, black sans-serif font, with "Development" in a smaller, black sans-serif font directly below it. The text is centered within a thin, light green circular outline. There are two soft, out-of-focus green circular spots on the light gray background, one to the upper left and one to the lower right of the central circle.

XINYU
Development