PUZZLE-M901 PUZZLE-M902

Software Defined Router for Small and Medium Business

10G/2.5G/1G high performance router

VPN server supporting IPSec/SSL

Rich network application expendable

PUZZLE-M901

• Marvell CN9130 2.2 GHz 64-bit SoC

- 6 x 2.5Gbps Ethernet
- Support 2242 M key M.2 PCle
- Gen3 x2

PUZZLE-M902

• Marvell CN9130 2.2 GHz 64-bit SoC

- 3 x 10Gbps Ethernet
- 6 x 2.5Gbps Ethernet
- Support 2242/2280 M key M.2 PCIe

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Gen3 x1



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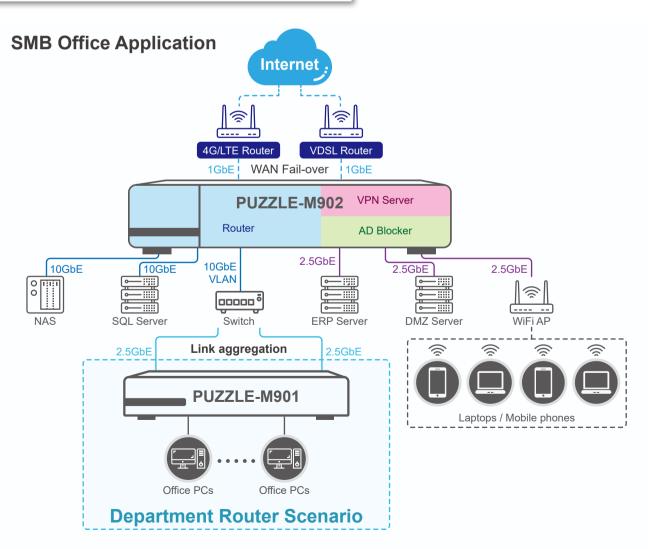
PUZZLE-M901/M902 Series Technology

A high speed software defined router for small and medium business

The PUZZLE-M901 and the PUZZLE-M902 are IEI's high-speed software defined routers powered by OpenWrt. The integrated 2.5GbE and 10GbE (M902) ports are ideally suited for a wide range of applications, such as SOHO and SMB networking infrastructure. The network interfaces can be defined with various combination to adopt the SMB network environment. Additionally, its function can also be expanded by open source applications supported in the OpenWrt community.



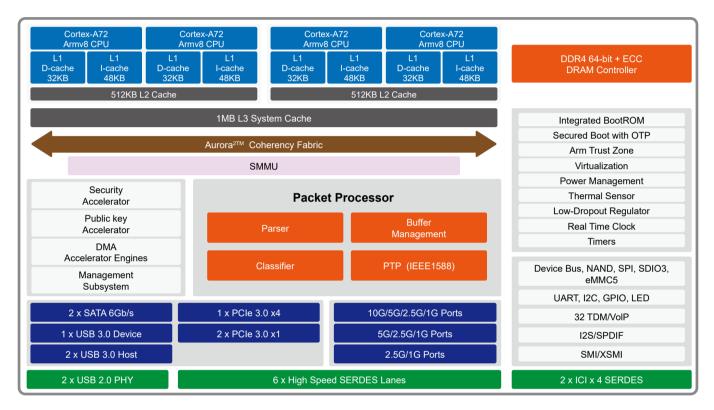
	PUZZLE-M901	PUZZLE-M902
CPU	Marvell® CN9130	Marvell® CN9130
LAN ports	6 x 2.5 GbE	6 x 2.5 GbE 3 x 10 GbE



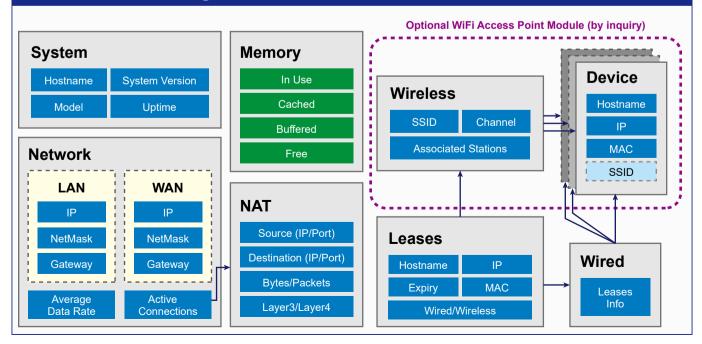
Marvell CN9130 SoC

The Marvell CN9130 is a quad-core Armv8 Cortex-A72 system-on-chip (SoC). The high-performance processor offers a complete function and acceleration for the networking and security applications.

- Four Cortex-A72 CPU: provide the computing power of application
- · Integrated high-speed network interfaces linked to internal high-bandwidth bus
- · Packet processor accelerates the packet processing for the NAT, QoS and packet filtering
- · Security accelerator offloads the processor on multiple IPSec/SSL VPN tunneling



High Performance Router Architecture



PUZZLE

OpenWrt



- An open source project based on Linux-based embedded operating system, used on embedded devices to route network traffic.
- The main components are Linux, util-linux, musl and BusyBox. All components are optimized to make them small enough to fit the limited storage and memory available to home routers.
- Use the command line interface (ash shell) or the web interface (LuCI) to configure OpenWrt. Approximately 3, 500 optional software packages can be installed through the opkg package management system.

Features

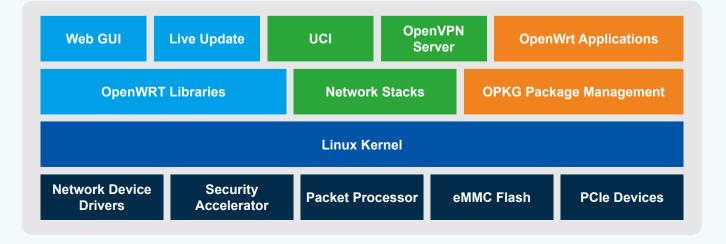
OpenWrt provides detailed possibilities to configure common network-related functions, such as IPv4, IPv6, DNS, DHCP, VPN, shadowsocks, DLNA, routing, Dynamic DNS, firewall, NAT, port forwarding, file sharing via SAMBA, NFS, FTP, SFTP and MQ Telemetry Transport through Mosquitto.

OpenWrt Package

- IP tunneling (GRE, OpenVPN, pseudowire, shadowsocks, etc.)
- Scalable real-time network monitoring and statistical information, such as RRDtool, Gathering, Nagios, Munin lite, Zabbix
- Dynamic DNS service can maintain a fixed domain name through an ISP that does not provide a static IP address, etc.
- · Load balancing used with multiple ISPs using source-specific routing
- Dynamically-configured port forwarding protocols UPnP and NAT-PMP through upnpd, etc.

OpenWrt Software Architecture

OpenWrt uses the common embedded Linux tools such as uClibc, busybox, shell interpreter and provides a hardware abstraction layer and package manager. Here is the software stack that OpenWrt uses:



OpenWrt

The PUZZLE-M901/M902 uses OpenWrt OS to provide a user-friendly web interface, a clear dashboard and port indicators to help you handle daily network management tasks. Users can not only efficiently manage all connected wires through OpenWrt OS in real time, but also configure firewall, VPN, security and advanced network functions.

Name	Enabled	Started	Start/Stop	Port	Protocol		
custom_config		no	start			Edit	Deleto
sample_server		no	start	1194	udp	Edit	Delete
sample_client		no	start		udp	Edit	Delete
Instance name		Select terr	plate			*	Add
WPN configuration	file upload						
Instance name		8808	未谓穩任何檔案				Upload

Status System Puzzle-MI01 Architecture Marvell Cortex-A72 OpenWrt 21.02-SNA Firmware Ve 54114 Local Time 2021-05-20 20h 32m 2s Load Averag 0.06, 0.03, 0.00 Memory Total Availab Uned 152.14 MB / 3.86 GB (3%) Buffered 1.08 MB / 3.86 CB (0%) Network

OpenVPN

OpenVPN is a virtual private network (VPN) system that implements techniques to create secure pointto-point or site-to-site connections in routed or bridged configurations and remote access facilities. It implements both client and server applications.

Pvi Pre	wal Put P	Invest						Hide empty chains Reset 0	Counters Restart Firewall
Table: I	Filter								
		CY: ACCEPT, 0 Par							
Pkts.	Traffic	Target	Prot.	la	Out	Scurce	Destination	Options	Comment
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1.12 K	141.23 KB	ACCEPT	18	*		00.0.00	0.0.0.0/0	clatate RELATED, ESTABLISH	ro - ai
10	640 B	syn_flood	top			00.0.00	0.0.0.00	top flags 0x17/0x02	
207	14.57 KB	zone_lan_input	al	br-un	•	000.00	0.0.0.0/0		
622	541.75 KB	zone_won_input	ali	ettű	•	0.0.0.0	0.0.0.0/0		
Chain F	ORWARD	(Policy: DROP, 0 P	Packets	, O B Tra	ffic)				
Picts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options	Comment
5.36 K	2.58 MB	forwarding_rule	al	•	•	0.0.0.0/0	0.3.0.6/3		Custom forwarding rule chain
5.23 K	2.55 MB	ACCEPT	al	•	•	0.0 0.0/0	0.0.0.0/0	ctatate RELATED,ESTABLISHED	
126	38.31 KB	zone_ian_forward	al	brian		0.0.0.0/0	0.3.0.0/0		
0	08	zone wen forward	al	+20		0.0.0.00	0.0.0.00		

Firewall

OpenWrt uses the firewall3 (fw3) netfilter/iptable rule builder application. It runs in user-space to parse a configuration file into a set of iptables rules, sending each to the kernel netfilter modules.

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Type to Rise	Cear	Package name		Update lists	Upkred Package	Configure oping.	
Available Installer	C Updates						
			Displaying 1-100 of 92	71			
Package name	Version	Size Lipito	Description				
461.cal	12	5.2 KB	454xiat provides support to	o deploy limited IPv4	access services to mobile		
6-4	26	2.5 K03	Provides support for Gin4 to	unnels in Jetu/contigi	intwork	Instal	
Ged	10	3.1 KB	Provides support for (rd tu	mels in /etc/configin	wiwork	Postal	
0804	13	1.9 KB	Provides support for (itol tunnels in /sto/bonfightstwork				
UOPapeeder	20210118-0-2	78.6 KB	A Tannel which improves y by using Forward Error Cor	rk Instal			
ad	2.2.55-1	20.9 KB	Access control list support			bostal	
acree	2.8.7-6	\$1.6 KB	A client for issuing Letsenc	Instal			
acme-dreapi	2.8.7-6	112.8 KB	This package provides DN	Potal			
acold	2.0.32-3	23.2 KB	The ACPI Daemon (acpid)	alth Netlink Support		Instal	
acaccid	1.1.8-1	50.4 KB	PCBC driver for ACS USB	COID (Drip/Smart G	ard Interface Devices)	Folal	
ado	android 6.02,r1-3	64.3 KB	Android Debug Bridge (ed) communicate with an emul			PolaL.	

Software Manager

There are multiple packages available in the OpenWrt package repository.

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Example of Free OpenWrt Software Package

Shadowsocks

Shadowsocks is not a proxy on its own, but (typically) is the client software to help connect to a third-party SOCKS5 proxy, which is similar to a Secure Shell (SSH) tunnel.Once connected, internet traffic can then be directed through the proxy.

OpenWit Subs - 5y	olam • Services • Network • VPN • Logout
Overview DIVE Report Edit	Elackfet Edit Whiteliat Log Vew
Adblock	
Configuration of the adblock par	kape to block advabuse domains by using DND. For further information check the online documentation
Information	
Statue / Version	enabled / 4.1.2
Blocked Domains	41.124
Active Sources	adaway, adjuant, cinconnect, yoyo
ONS Backend	(Onemany (r), Amplithomasy (i)
Run Ubls	download. Ainfusient felds, and Aanfloexochart consults, switchinfousybox
Run interfaces	troper aan, report -
Run Directories	basic Arroy backapic Amprilabilitick-Backapi, reports Amprilabilitiek Report, jaik Amp
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Settings	
General Settings Additional (ettings Achienced DNG Gettings Achienced Report Settings Achienced E-Mail Settings Elocidiat Sources
Enabled	0
	C Enable the additional service.
Startup Trigger Interface	www.gi I +
	List of available reteriork interfaces to trigger the adblock start. Choose "unspecified" to use a classic startup timeout instead of a network trigger.
Force Local DNS	0
	Redirect al DNS queries from specified zones to the local DNS resolver, applies to UDP and TCP protocol.
Enable SaleExarch	0
	@ Entering Satisfearch for geogle, bing, duckdurkige, yandee, youtube and pixaboy.

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Ad blocking

Ad blocking or ad filtering is a software capability for blocking or altering online advertising in a web browser or an application.

Aria2

Aria2 is a lightweight multi-protocol & multi-source command-line download utility. It supports HTTP/ HTTPS, FTP, SFTP, BitTorrent and Metalink. Aria2 can be manipulated via built-in JSON-RPC and XML-RPC interfaces.

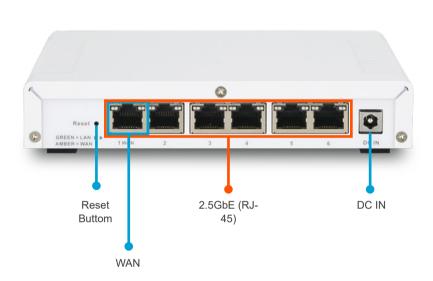




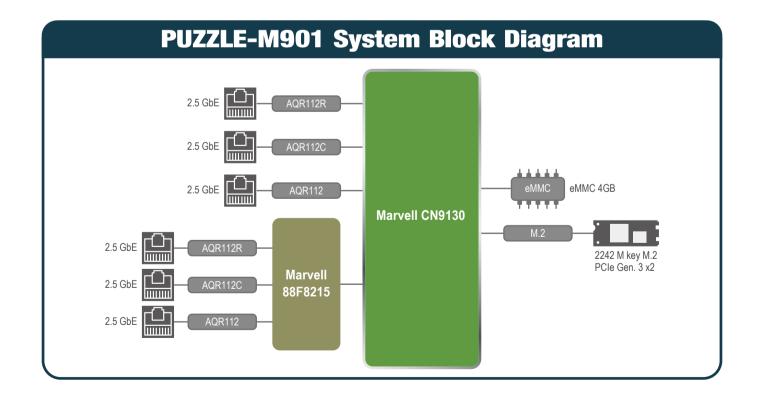
DLNA Media Server

Based on the official DLNA standard, this service streams pictures, videos and music of a given media folder to DLNA-capable entertainment devices on the same network (e.g. modern Smart-TVs).

PUZZLE-M901 Connection Configuration

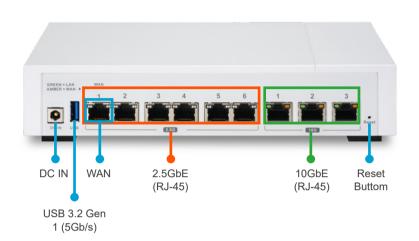


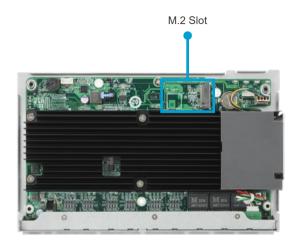


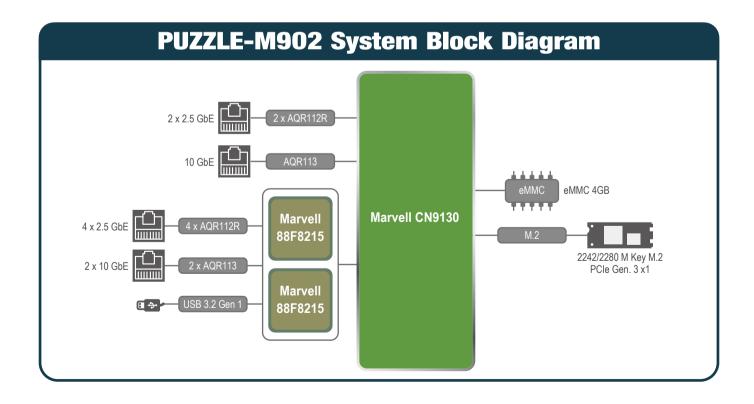


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PUZZLE-M902 Connection Configuration







PUZZLE-M901



Features

- Marvell CN9130 quad-core Armv8 cortex-A72 [@] up to 2200 MHz
- Six 2.5 GbE RJ-45 ports
- Onboard 4 GB eMMC, one console port (pin-header)
- LED indicators : Status/Power & WAN/LAN, interface indicator
- Pre-installed OpenWrt
- Support 2242 M key M.2 PCIe Gen3 x2

		PUZZLE-M901		
Form Factor	Desktop	Desktop		
Form Factor	CPU	Marvell® CN9130 quad-core Armv8 Cortex-A72 @ up to 2200 MHz		
	eMMC	1 x 4GB eMMC		
	M.2 SSD Slot/Specs	1 x 2242 M key M.2 PCIe Gen. 3 x2		
		Aquantia AQR112R		
	Ethernet IC	Aquantia AQR112C		
		Aquantia AQR112		
		1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112R		
Networking		1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112C		
	Ethernet Port	1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112		
		1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112R)		
		1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112C)		
		1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112)		
External I/O	USB	USB 3.2 Gen 1 (5Gb/s)		
Power and Mechanical	Reset Button	1 x Reset Factory Button		
Power and Mechanical	System Cooling	Active Fan		
	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)		
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)		
Physical and Environmental	Relative Humidity	5~95% non-condensing, wet bulb: 27°C		
	Dimensions (W x L x H) (mm)	166.4 x 145.7 x 34		
	Certification	CE/FCC/BSMI (BSMI safety)/VCCI, LVD		
OS and Cartifications	Operating System	OpenWrt		
OS and Certifications	Forum	OpenWrt forum		
	FAQ	OpenWr FAQ		
Indicators	LED Indicators	Status/Power, WAN/LAN interface indicator		
Indicators	System Warning	Веер		

Specifications

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PUZZLE-M902

Desktop network appliance with Marvell CN9130 processor, six 2.5GbE and three 10 GbE, on-board 4GB eMMC, one M.2 slot



Features

- Marvell CN9130 quad-core Armv8 cortex-A72 [@] up to 2200 MHz
- Six 2.5 GbE RJ-45 ports & Three 10 GbE RJ-45 ports
- Onboard 4 GB eMMC, one console port (pin-header)
- LED indicators : Status/Power & WAN/LAN, interface indicator
- Pre-installed OpenWrt
- Support 2242/2280 M key M.2 PCIe Gen3 x1

		PUZZLE-M902		
Form Forder	Desktop	Desktop		
Form Factor	CPU	Marvell® CN9130 quad-core Armv8 Cortex-A72 @ up to 2200 MHz		
Manaan	eMMC	1 x eMMC 4GB		
Memory	M.2 SSD Slot/Specs	1 x 2242/2280 M Key M.2 PCle Gen. 3 x1		
	Ethernet IC	Aquantia AQR112R		
	Ethernet IC	Aquantia AQR113		
		2 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112R		
Networking	Ethernet Port	4 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112R)		
		1 x 10GbE LAN integrated in CPU via PHY Aquantia AQR113		
		2 x 10GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR113)		
External I/O	USB	USB 3.2 Gen 1 (5Gb/s)		
Power and Mechanical	Reset Button	1 x Reset Factory Button		
	System Cooling	1 system fan		
	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)		
Dhusical and Environmental	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)		
Physical and Environmental	Relative Humidity	5~95% non-condensing, wet bulb: 27°C		
	Dimensions (W x L x H) (mm)	226 x140 x 50.5		
	Certification	CE/FCC/BSMI (BSMI safety)/VCCI, LVD		
OS and Certifications	Operating System	OpenWrt		
	Forum	OpenWrt forum		
	FAQ	OpenWr FAQ		
Indicators	LED Indicators	Status/Power, WAN/LAN interface indicator		
	System Warning	Веер		

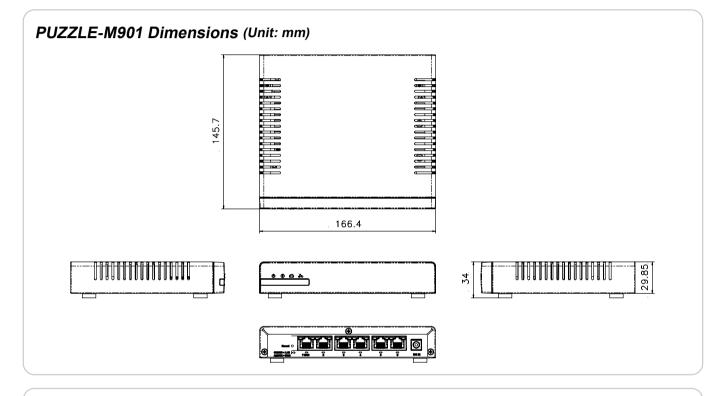
Specifications

Ordering Information

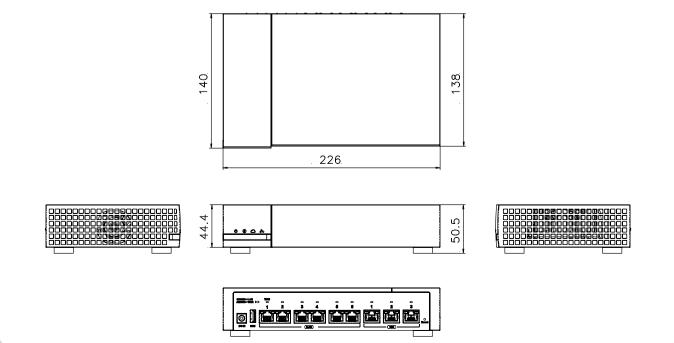
Part No.	Description
PUZZLE-M901-CN1-R10	Desktop network appliance with Marvell CN9130 processor, six 2.5GbE, on-board 4GB eMMC, one M.2 slot, RoHS
PUZZLE-M902-CN1-R10	Desktop network appliance with Marvell CN9130 processor, six 2.5GbE and three 10 GbE, on-board 4GB eMMC, one M.2 slot, RoHS

Packing List

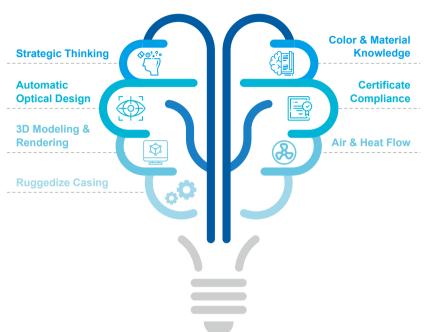
	PUZZLE-M901-CN1-R10	PUZZLE-M902-CN1-R10
Power cord	1	1
Power adapter	1	1



PUZZLE-M902 Dimensions (Unit: mm)



ODM Service *Zero to One, Build the Future*



IEI has more than 20-year IPC knowledge and has delivered hundreds of ODM projects covering different industries. Accumulated know-how makes us easier to communicate with customers and understand their needs. In addition, we provide a wide range of computing products for various industries and allow customers to customize our standard products. Product development and manufacture experiences allow us to provide quick responses to customers' requirements and meet or exceed customers' expectations to save development time and cost.

Advanced Network Customized Solutions





*Specifications are subject to change without prior notice.

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