ARP Radio Modem & Router
Datasheet

Radio Router

- 83kbps / 25kHz
- 1xETH, 2xCOM,1xUSB
- 0.1 – 10 watts
- Sleep & Save modes
- - 40 to + 70°C
- Embedded diagnostic
- 256 AES encryption
- SW feature keys
- Web interface

Applications

- Water
- Oil & Gas
- Electricity
- Others

General

ARP is a best-in-class **radio modem**, not only in terms of data speed. This Software defined Radio with Linux OS has been designed with attention to detail, performance and quality in mind. All relevant state-of-the-art concepts have been carefully implemented without any compromise.

ARP provides 24/7 reliable service for **mission-critical applications** like SCADA & Telemetry for Utilities and Smart grid power networks.

Every unit can serve as the central master, a repeater, a remote terminal or all these simultaneously. It is only a matter of easy configuration accessible from a web browers.

Anybody with basic IP knowledge is capable of starting a ARP within a few minutes and maintain the network quite easily.
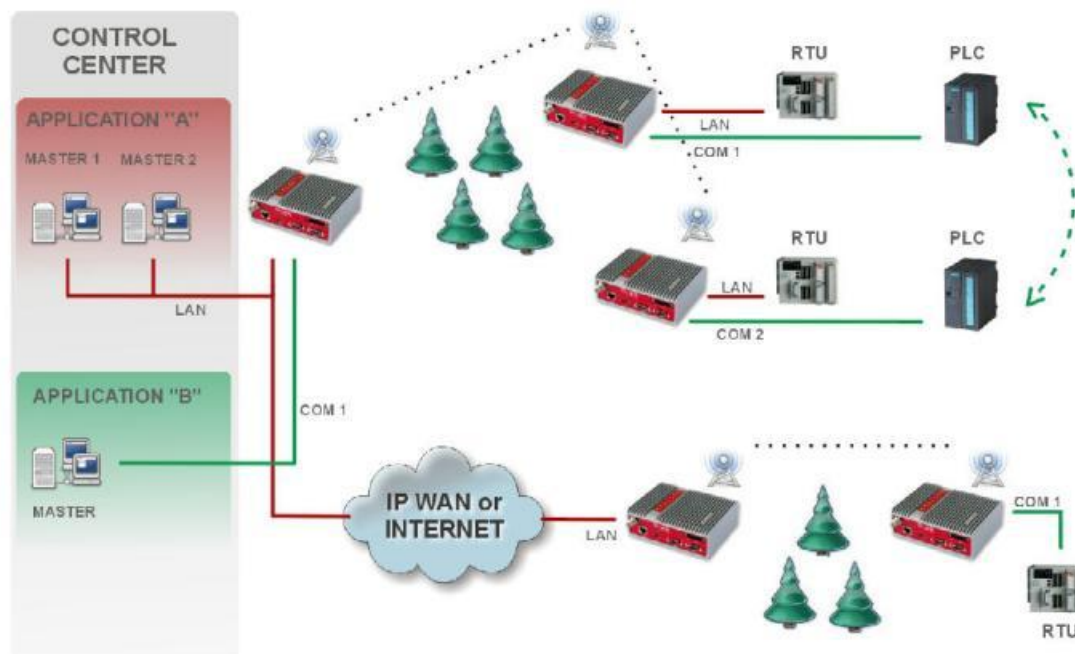
Router or Bridge	
Router mode	**Bridge mode**
ARP works as a standard IP Router with 2 Interfaces (Radio and Ethernet) and 2 COM port devices without any compromise. There is a sophisticated anti-collision protocol on Radio channel, where every single packet is acknowledged. In addition every unit can simultaneously work as a store-and-forward repeater.	Packet received on any interface is broadcast to respective interfaces on all units. Packes received on COM are broadcast to both COM1 and COM2 at remote sites, allowing you to connect 2 RTU's. Every unit can simultaneously work as a repeater.

Easy to configure and maintain	Data speed

• **Basic** IP knowledge is sufficient
 	
• **Web interface**
 	
• Service access via ETH or USB interfaces independently. (ETH/USB adapter with DHCP is used for USB interface)
 	
• **Wizards** – fast and simple setup
 	
• **All** configuration **parameters within one page**
 	
• The fastest web access to remote unit: only the effective data transferred over the air, html page downloaded from the local unit.
 	
• CLI via SSH
	• 83 kbps / 25 kHz
	
	  42 kbps / 12,5 kHz
	
	  21 kbps / 6,25 kHz
	
	• **AutoSpeed** – every unit is capable to receive packets with different data speeds without changing its settings.
	
	• **Optimization** – embedded optimization tripes the throughput on the Radio channel.
	
	• **Stream mode** – transmitting on the Radio channel starts immediately, without waiting for the end of the received frame on Com --> zero latency

Pay only for what you need	Energy savings
• SW authorization keys allow to use or to add advance features only when and where needed • **Coded features** – Router mode, 83 kbps, COM2, 10W	• Sleep mode – 0.07 W, controlled via a digital input • Save mode – 1.5 W, wake up by a packed received from Radio channel, destined for the unit.

Diagnostic & Network Management

- **Embedded diagnostic & network management**
- **Statistic** logs for interfaces and communication links
- Historical and on-line values displayed in **graphs**
- 20 periods (e.g. days) of history
- **Watched values** (RSS, Ucc, Temp, PWR etc.) also from neighbouring units
- **SNMP** including generation of TRAP alarms when preset treshholds exceeded
- HW **Alarm input**, HW **Alarm output**

Security

- Licensed radio bands
- **FEC**, interleaving, proprietary data compression
- **CRC32** data integrity control on Radio channel
- Proprietary protocol on Radio channel with packed acknowledgement
- **AES256** encryption
- **Firewall** – address filtering
- **Password** – protected access, **https** web interface

Coverage

- 160, 300, 400, 900 MHz bands
- **Line of sight is not required**
- Max. distance **more than 50 km**
- Carrier output power **0,1 – 10 W**
- Exceptional data sensivity – typically

  - 98 dBm / 83 kbps / 25 kHz / BER 10e-6

  - 115 dBm / 10 kbps / 25 kHz / BER 10e-6

- High resistance to multipath propagation and interference
- **Any unit** can work **simultaneously as a repeater**
- **Unlimited number of radio hops**
- **Hybrid networks** – any IP network (Internet, 3G/GPRS etc.) can interconnect ARP units

User protocols

- **Modbus, IEC101, DNP3, Comli, DF1, Profibus, IEC104, Modbus TCP and others**
- Unique implementation – SCADA serial protocol addresses are mapped to ARP addresses
- Each packet is transferred as an acknowledged unicast
- Sophisticated anti-collision protocol on Radio channel à report by exception from remotes, simultaneous multi-master polling
- **Terminal server** – 5 independent sessions

  - Encapsulates serial protocol to TCP(UDP) and vice versa

  - Eliminates a transfer of TCP overhead over Radio channel

- Embedded **Modbus RTU / Modbus TCP converter**

Reliability

- Every single unit **tested in a climatic** chamber as well as in real traffic
- **Military or industrial components**
- Industrial rugged die-cast aluminium case
- **-40 to +70°C** functional, -30 to +55°C certified
- 2 years warranty

Others

- DIN rail, flat or 19" rack mounting
- "X5" – external ETH/USB adapter with DHCP for service access via USB interface
- Separated Rx and Tx antenna connectors (optionally)

ABB Radio modem & Router **ARP**

Values from: **jmeno stanice**   Fast remote access   ?

Graphs ?

Overview   Sampling period: 00:01:00 - File period: 00:59:00

2010-10-02 02:59:24
RSS = -49 dBm

2010-10-02 02:50:24   2010-10-02 03:49:24

Files   10/10/01 23:05
1st IP   This unit
1st line   Temp
2nd IP   192.168.0.29
2nd line   TxLost
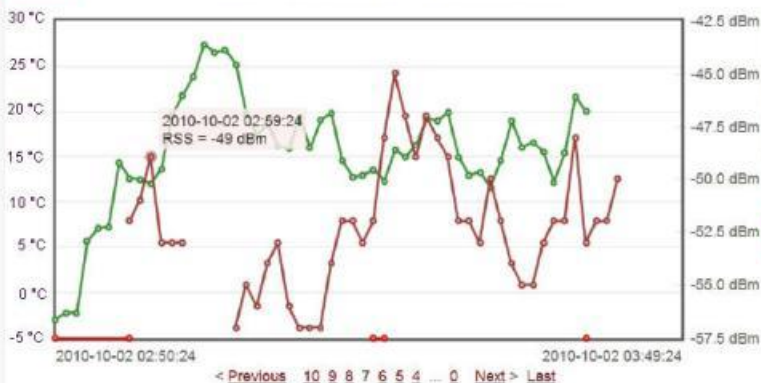
Show thresholds

Legend
Temperature
RSS

Display

< Previous   10 9 8 7 6 5 4 ... 0   Next >   Last

Technical parameters

Radio parameters

Frequency bands	135-175; 290-350; 350-470; 928-960 MHz
Channel spacing	6.25 / 12.5 / 25 kHz
Frequency stability	+/- 1.0 ppm
Modulation	16DEQAM, D8PSK, ττ/4DQPSK,CPFSK
Data rate	83 kbps / 25.0 kHz
	42 kbps / 12.5 kHz
	21 kbps / 6.25 kHz
Carrier output power	0.1 to 10 W programmable (2W for >42kbps / 25kHz)
Duty cycle	Continuous
Sensitivity for BER 10e-6	-98 dBm / 83 kbps / 25 kHz
	-115 dBm / 10 kbps / 25kHz
Blocking	> 84dB

Interfaces

Ethernet	10/100 Base-T Auto MDI/MDIX	RJ45
COM 1	RS232	DB-9
COM 2	RS232/RS485 SW configurable	DB-9
USB	USB 1.1	Host A
Antenna	50 Ohms	TNC

Environmental

Temperature	-40 to +70 °C functional, -30 to +55 °C certified
Humidity	5 to 95% non-condensing

Electrical

Primary power	10 to 30 VDC or PoE
Rx	360mA / 13.8V; 200mA / 24V;5 Watts
Tx	5W -2.4A / 13.8V; 1.3A / 24V; 33 Watts
	10W -3.0A / 13.8V; 1.6A / 24V; 42 Watts
Sleep mode	5mA / 13.8V; 3mA / 24V; 0.07 Watts
Save mode	120mA / 13.8V; 70mA / 24V; 1.5 Watts

Diagnostic and Management

Radio link testing	Yes (ping with RSS, DQ, Homogenity)
Watched values	Ucc, Temp, PWR, VSWR, RSS, DQ, TxLost,
in each radio modem	Rx/Tx packets for ETH, COM1, COM2
Graphs	For Watched values and Statistics
Statistics	Rx/Tx packets on User interfaces and for User data and Radio protocol (Repeats, etc.) on Radio channel

Mechanical

Casing	Rugged die-cast aluminium	
Dimensions	150 W x 118 D x 50 H mm (5.90 x 4.65 x 1.97 in)	
Weight	1,1 kg (2.4 lbs)	

SW

Operating modes	Bridge / Router
User protocols on COM	Modbus, IEC101, DNP3, UNI, Comli,
	DF1, Profibus...
User protocols on Ethernet	Modbus TCP/Modbus RTU convertor, IEC104,
	Terminalserver...
Multi master applications	Yes
Report by exception	Yes
Collision Avoidance Capability	Yes
Repeaters	Store-and-forward; Every unit; Unlimited number

Approvals

CE, FCC

Power and productivity
for a better world™

ABB