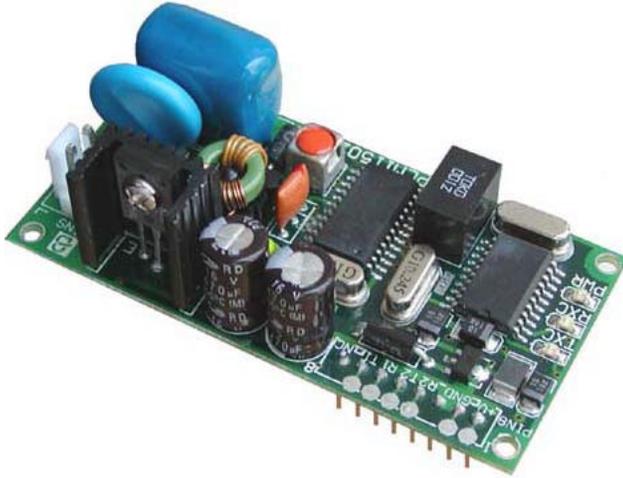


**Embedded Power Line Modem ATL90115-1 and ATL90115-3**



**ATL90115-1**



**ATL90115-3**

## **Embedded PLC Modem ATL90115-1 and ATL90115-3**

The ATL90115 series Embedded PLC Modem is a ready-to-go circuit module, which is capable of transferring data over the power cable at the low voltage end of the power transformer of a 3-phase/ 4-wire distribution network. A pair of Embedded PLC Modems connected on the power line can provide low speed bi-directional data communication at a baud rate of 300 bps. It is built in a small form factor that can be easily integrated into and become part of the user's power line data communication system. The PLC modem is based on the Direct Sequence Spread Spectrum Technology, which ensures high noise immunity and reliable data communication.

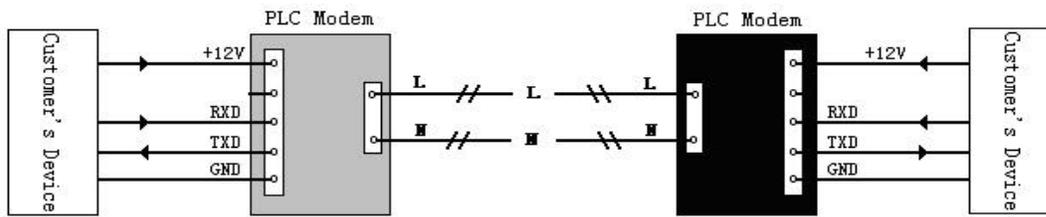
The modules provide bi-directional half-duplex data communication over the mains of any voltage up to 250v a. c., and for frequency of 50 or 60 Hz. . It does not require any protocol to function and therefore is protocol independent. Data flow through PLC modem as if it is a channel and therefore it is transparent to the Data Devices. As a result, with user's proper addressing and communication protocol, multiple units can be connected to the mains without affecting the operation of one another. There is no hassle of building interface circuits. It has a built-in on board AC coupling circuit, which allows direct and simple connection to the mains. Interface to user's data devices is a simple data-in and data-out serial link. Power to the PLC Modem circuit module is a single +12v DC supply.

Applications of the Power Line Modem include status monitoring, control and data communication of devices connected on the power line, such Home Automation, Lighting Control, HVAC control, Low Speed Data Networks, Automatic Meter Reading, Signs and Information Display, Fire and Security Alarm, ... and so on.

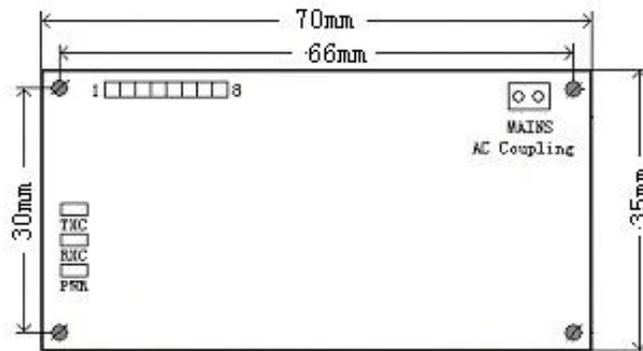
### **Features**

- Embedded ready-to-go Power Line Carrier Modem module with SMT components
- Small form factor for easy of system integration
- Bi-directional half-duplex data communication over the mains
- Applicable to universal mains voltage and frequency up to 250v, 50 – 60 Hz
- ATL90115-3 applicable to 3-phase 4-wire network of up to 460VAC phase to phase
- Protocol independent, data transfer transparent to user's data terminals
- High noise immunity and reliable data communication
- Simple serial interface to user's data devices
- Built-in on board AC coupling circuit with direct connection to mains
- Built-in carrier generation and detection
- Multiple units can be connected to the power line of the distribution transformer
- Baud rate of 300 bps
- Selectable TTL and RS232C level serial interface to user's data devices
- Built with industrial grade components for operation under harsh environment
- Complies with EN50065-1: 2001

## ATL90115-1 Application Diagram



## ATL90115-1 Connector and indicator layout



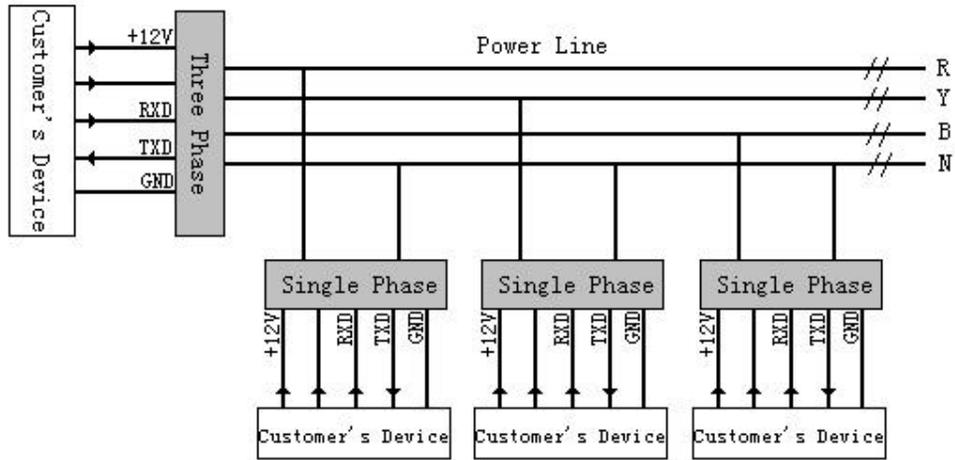
## ATL90115-1 Data port pin out assignment

Pin	Symbol	Description	Direction
1	+12V	+12v in	Input
2	GND	Ground	Input
3	GND	Ground	Output
4	RXD-232	RS232C level Data in	Input
5	TXD-232	RS232C level Data out	Output
6	RXD-TTL	TTL level Data in	Input
7	TXD-TTL	TTL level Data out	Output
8	NC	No Connection	-

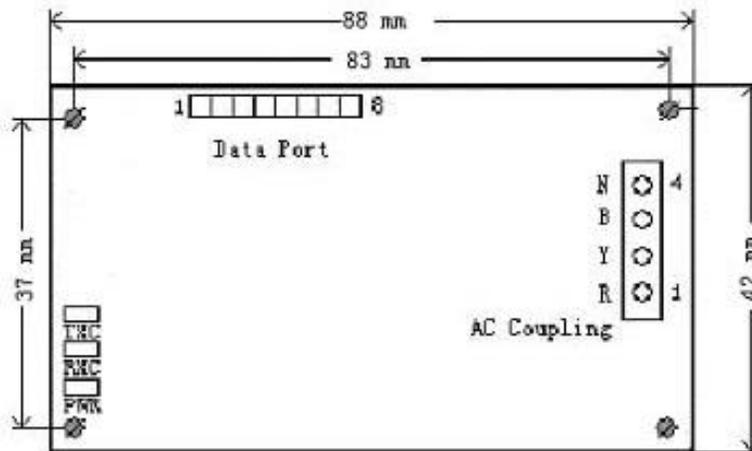
## ATL90115-1 AC coupling pin out assignment

Pin	Symbol	Description	Direction
1	L	AC mains in	Input
2	N	Neutral in	Input

### ATL90115-3 Application Diagram



### ATL90115-3 Connector and indicator layout



ATL90115-3 Data port pin out assignment

Pin	Symbol	Description	Direction
1	+12V	+12v in	Input
2	GND	Ground	Input
3	GND	Ground	Output
4	R-232	RS232C level Data in	Input
5	T-232	RS232C level Data out	Output
6	R-TTL	TTL level Data in	Input
7	T-TTL	TTL level Data out	Output
8	NC	No Connection	-

ATL90115-3 AC coupling pin out assignment

Pin	Symbol	Description	Direction
1	A	Phase A (Red)	Input/ Output
2	B	Phase B (Yellow)	Input/ Output
3	C	Phase C (Blue)	Input/ Output
4	N	Neutral	Input/ Output

NB: Always connect Neutral first before connecting the phases and disconnect Neutral last.

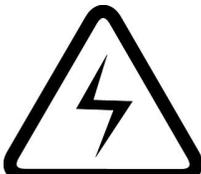
## Notes on Testing Methods

1. Connect PLC modem with the user device as in the application diagram
2. Test the modem with your application software or you may download a test program from the web page: <http://www.archnetco.com/english/product/ATL90.htm>
3. Check that the baud rate of the user devices should be consistent with that of the PLC modem
4. Data packets should not be larger than 256 byte, or use multiple packets

## Specifications

Model no.	ATL90115-1	ATL90115-3
Phase	Single phase	3-phase
Baud Rate	300 bps	300 bps
DC Supply Voltage	+12V	+12V
Current Consumption (Idle/ Transmitting)	50/200 mA	50/210 mA
Data Line Voltage Level	TTL/ RS-232	TTL/ RS-232
On Board Indicator	PWR, RXC, TXC	PWR, RXC, TXC
PLC Technology	DSSS	DSSS
Central PLC Frequency	115 KHz	115 KHz
Maximum Output Level	<122 dB (i V)	<122dB (i V) per phase
Data Packet Size	<256 byte	<256 byte
Maximum Communication Distance (no load)	>300m	>300m
Max. AC Coupling Voltage (Phase-neutral)	250v AC	250v AC
Operating Temperature	-20° C ~ 70° C	-20° C ~ 70° C
Humidity (non-condensing)	5% ~ 95%	5% ~ 95%
Dimensions LxWxD	70×35×25 (mm)	88×42×25 (mm)

\*Specifications are subject to change without prior notice.



**! Caution: Live AC Voltage on board**

## An example of data transfer testing

The PLC modem is a physical layer hardware communication device. It is up to the data device (e.g. your PC) to identify the data. If you are connecting multiple PLC modems on the power line, you should include data device ID in your data packets for the data device to decide if the message is for it or not, i.e. you need communication protocol for data transmission, such as device ID, acknowledgement and time out etc.

Note that the power line is used as a bi-directional half-duplex medium, you should allow the data to settle before transmitting and do not connect TXD and RXD of your RS232 port to perform a loop-back test.

The schematic below is an example of connecting a ATL90115-1 for testing of data transfer only. To effect data communication, two PLC modems should be connected to two data devices. The modem is connected for RS232 data level. You may use any “dumb terminal” communication software or download it from our website. Please remember to set the COM port, baud rate and data format in the software.

## Connection diagram

