



AUTOMETERS



ACG-5

Autometers Certified Gateway

OVERVIEW

ACG-5 is the latest development from Autometers moving the installation of electricity meters with communication to a new level. Answering the needs of the market where meters are required to be fitted with Modbus RS485 and then wired from the meter to an external junction box for onward connection to a building management system.

This is an intelligent gateway providing a patch lead connection system with an in built test facility. This provides a simple, accurate installation and a means to provide certification of connectivity and communication prior to despatch from the manufacturing facility.

The ACG-5 has been designed to enable either one display per meter, or two or more displays for client selectable “groups” of meters, i.e. Lighting, Power etc, this gives the client full flexibility and ensures that the system is both engineering complete and user functional.

- ***Easy installation***
- ***Patch lead connection***
- ***Free software download available online to enable individual meters to be named***
- ***Grouping facility on individual displays***
- ***In built test feature to check all meters connected and working***
- ***Certification record date stamped***



INTRODUCTION TO THE ACG-5 GATEWAY

The ACG-5 has been designed as a means of making the connection to Modbus meters as simple and as easy as possible. The ACG-5 can only be used with Autometers Product range of meters.

It is an ideal device to be used between the meters and the BMS system, it allows simple testing of meters connected to the ACG and local interrogation of the meters.

The ACG has a maximum of 16 separate meter inputs either by RJ45 sockets located on the left hand side or by using the wired terminals on the right hand side, you can use both these connections as long as you do not use the same number terminal when adding a meter.

The unique thing with the ACG -5 is that the design has enabled these same terminals for a number of remote display's. You can only use a maximum of 8 remote displays per ACG-5 gateway.

The benefit of the remote display is that it can be set up in various configurations either as an individual display per meter or it can be set up as a group register.

CONNECTING THE ACG-5

The benefit of having the facility to have remote displays connected is that you no longer need the individual meters to be panel mounted and can fit the meter in a more suitable position local to the current transformers, saving long lengths of cable and making the installation easier and more practical. The ideal situation would be to position all the individual meters in one place and use perhaps two or more remote displays from the ACG-5 for interrogation of electrical parameters, thus saving on lots of cut outs on the front of the panel.



Diagram 2

Scroll keys

16 - RS 485 sockets for use with Autometers range of meters and displays

Wired terminals for up to 16 RS 485 inputs or a mixture of meter inputs and remote displays

- Power supply
- Programming connection
- RS 485 link to a BMS or another ACG-5

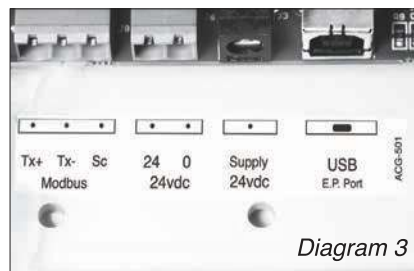


Diagram 3

Close up showing lower terminal compartment

INSTALLATION

The ACG-5 should be mounted in a dry, dirt free environment away from heat sources and very high electric fields. Temperatures should not exceed 70 C or fall below -20 c and should be fitted by a competent qualified electrician.

The ACG-5 should be fitted to ensure easy access at all times, fitted at a suitable height allowing the user to press the scroll keys which are fitted on the front of the unit.

Check contents before installing, you should receive the ACG-5 in its enclosure with all the covers in position and held firm by the screws. Remove screws to release the two covers and check that all terminals are in position as per diagram 2. There should also be a small box containing the plug in transformer which powers up the electronics in the ACG-5 unit.

MODBUS CONNECTION

At the bottom of the ACG-5 there are four connections (diagram 3), the first on the left is the Modbus connection (3 terminals plug in socket) this connection is for connection to the BMS system or onward connection to another ACG-5 gateway. The second connection is an optional connection for the power supply (2 terminal plug in socket. 24vdc). The third connection is for the plug in transformer (24vdc) supplied with the ACG. The fourth connection is the USB socket and this is used for programming the ACG with the optional free software.

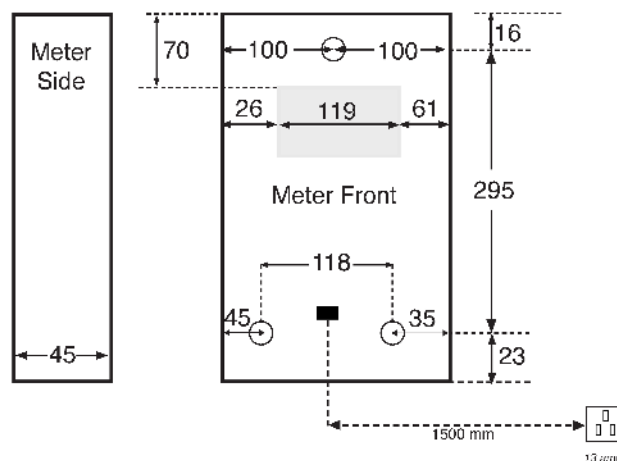
If you are using the IC-5 meters it will be more convenient to use patch leads these come in various lengths and are available from Autometers Systems Ltd.

When wiring the external meters to the ACG-5 it is important that each meter has the 120 ohm resistor fitted (this defines the end of the line) The ACG-5 has the 120 ohm resistor built in as standard.

DIMENSIONS

All measurements are in mm.

○ = fixing holes



SETTING UP THE ACG-5

When the ACG-5 has been fitted and all wiring is complete the unit may need to be programmed. The ACG-5 will have been set to factory default setting which are 9600 Baud rate, Terminator switched off, Parity Even and Range 1-17.

If there is only one ACG-5 being used in the system and it is being connected to Autometers Horizon system then you will need to switch the Terminator to the "ON" position. (See programming options page 5). If there is more than one ACG-5 being used in the system then you must switch the Terminator to the "ON" position in the last ACG-5 in the LAN.

If the ACG-5 gateways are being used with another BMS system then you must set up all the various parameters to match that particular BMS System.

TECHNICAL DETAILS

Power Supply

The ACG-5 requires a power supply of 24 Volt DC (0.65 amp). A plug in transformer is supplied as standard with the ACG-5 .

 approved:

ACG-5, ACG-5 display: EN55022-2006, EN6100-6-1-2007 + A1 +A2.
UKAS testing laboratory no: 1574

AUTOMETERS COMMISSIONING

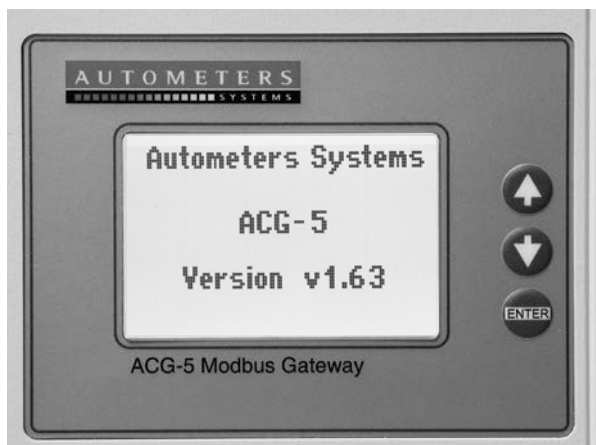
Autometers now offer a full wiring and commissioning service for the Autometers range of meters and it is essential that all wiring is easily identified by clear markings on the cable for traceability. Due to the complexity of the installations it may be necessary for an inspection first.

Please contact Autometers Systems Ltd for further information on this service.

POWER UP

When power is first applied to the ACG-5 the device will run through it's set up procedure, you will notice that the displays will change please wait until display number 4 appears.

Please see below for explanation of display's.



1. Indicating version number



2. System Power up

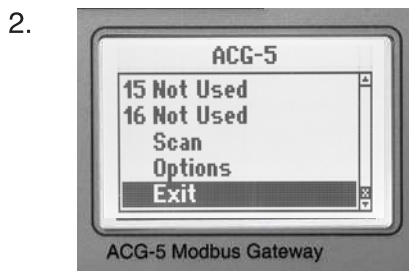
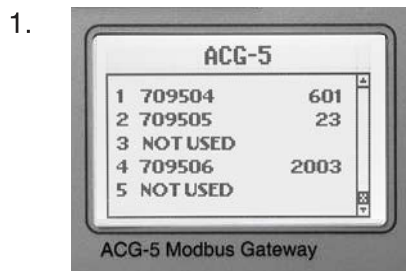


3. System Initialising



4. Connection status

To view meters and default settings press arrow keys



It is important when selecting the range to understand that you can not have the same number range on two ACG units.

Example. If you have three ACG units in the LAN you must select range 1-17 on the first ACG, 18-34 on the second ACG and 35 -51 for the third..

Press the key again and you will see the display with selectable options.

The above display indicates all meters connected to the ACG.

- The column on the left indicates the channel numbers on the ACG
- The centre column is the meter serial number
- The right hand column is the kWh registered on each meter

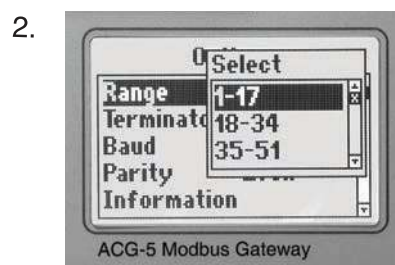
2a. Scan: To select scan move the black bar down over the word scan and press the key marked "ENTER" the ACG will now start to search the LAN and indicate on the display all meters connected.

2b. Options: To select options move the black bar down over the word "OPTIONS" and press the key marked "ENTER" the ACG will now take you into the programming options display.

2c. Exit: To select exit move the black bar down over the word "EXIT" and press the key marked "EXIT" the ACG will now take you back to connection Status.

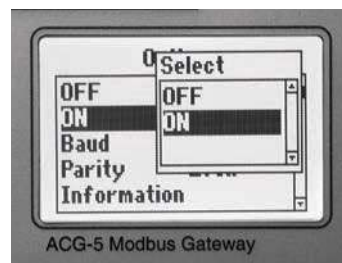
PROGRAMMING: OPTIONS

To enter programming model selection Options (in Menu above) this will take you to picture 1 below, to adjust any parameters on the list you must hold down the two arrow keys for approximately 5 seconds. This will then take you picture 2 below.



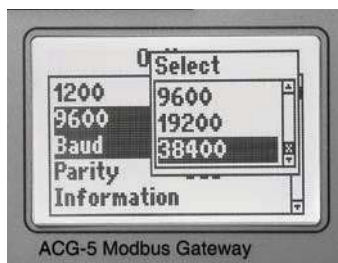
The Range in the Options menu defines the number of meters connected on the ACG Gateway. If installing more than one ACG on the network it is vital that you make sure you program the second ACG range with the next available number.

Terminator



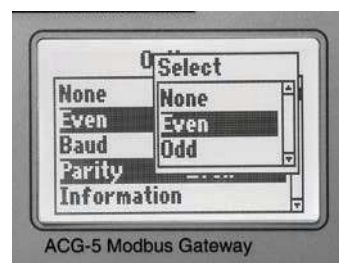
The terminator must be switched on the last ACG in the LAN.

Baud



The Baud Rate and Parity must be selected to match the requirements of the BMS system the ACG will be connected to.

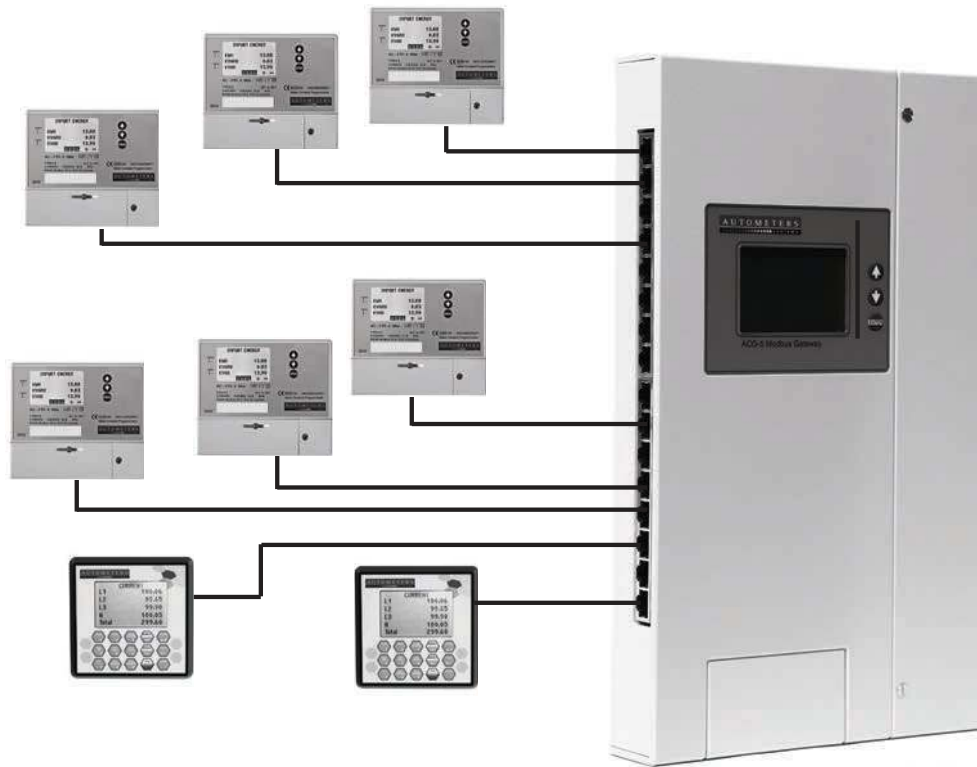
Parity



REMOTE DISPLAYS

The ACG-5 has been designed to have maximum flexibility enabling various combinations of meters and remote displays. The advantage of this is that it enables 15 meters to be connected with only one remote display or any combination up to 16 inputs. Each display can be programmed to view all the meters on the ACG -5 or using the free software you can program the display to view any combination of meters.

A typical example of this would be two remote displays one monitoring the power load meters and one monitoring the lighting load meters, but many other combinations are possible.



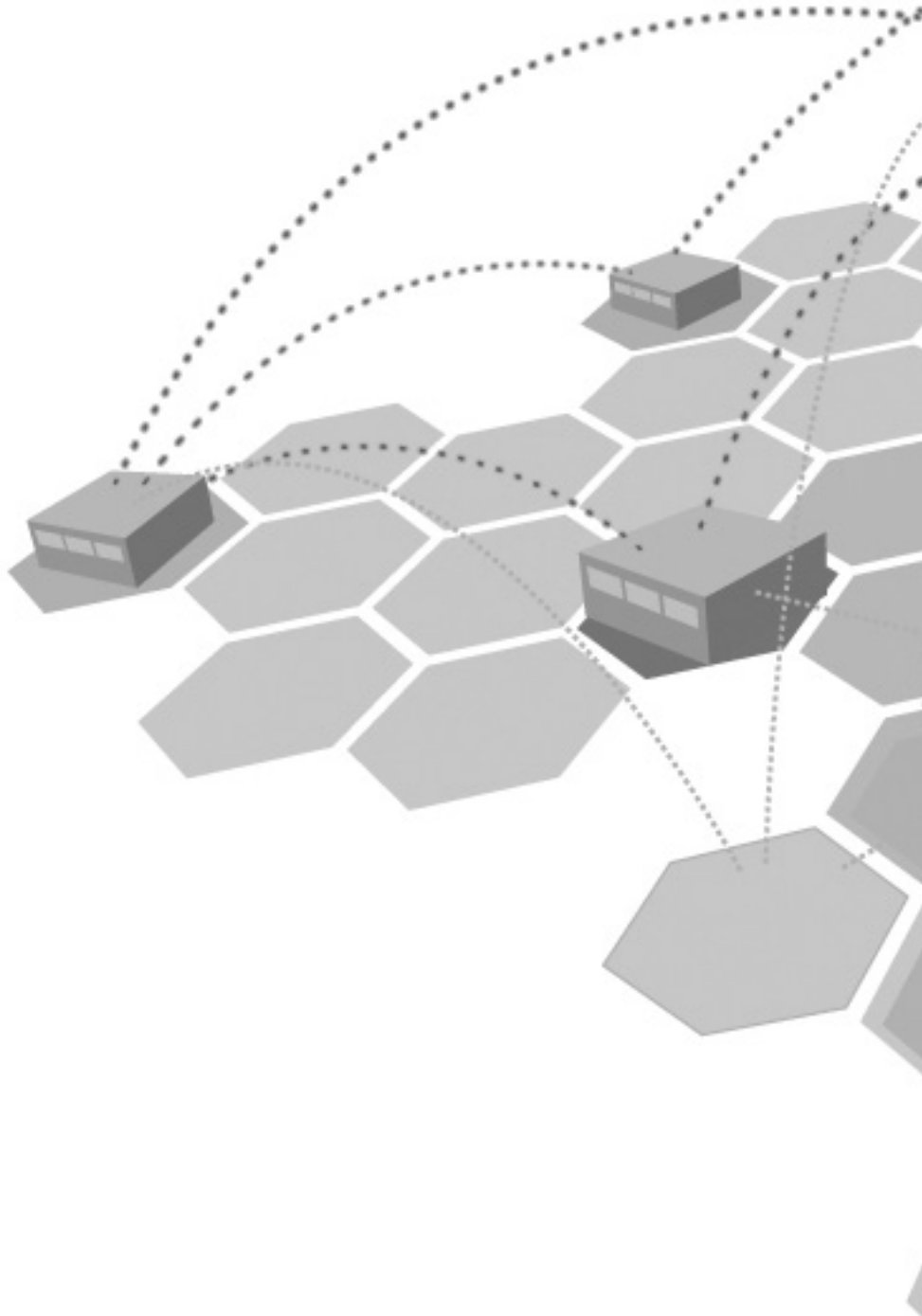
Each remote display will show you the electrical parameters available on the meter which you have designated to be viewed, for example if you have selected an IC5-9 then you will be able to see the full Harmonic information available from that meter on the remote display just the same as on the meter it self.

This again has advantages because now you can position the meter in a more suitable and easier position for the installation.

SOFTWARE AVAILABLE

A free software package is available via the Internet. This enables you to create index lists, individually name each meter on the list and create separate displays to indicate different loads. e.g. Lighting and Power displays. The software also allows you to print a certification document proving all meters and displays are working.

To download this software please go to: www.autometers.co.uk/acg-software



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