AUTOMETERS SYSTEMS

IC-970 Meter *Information Centres*

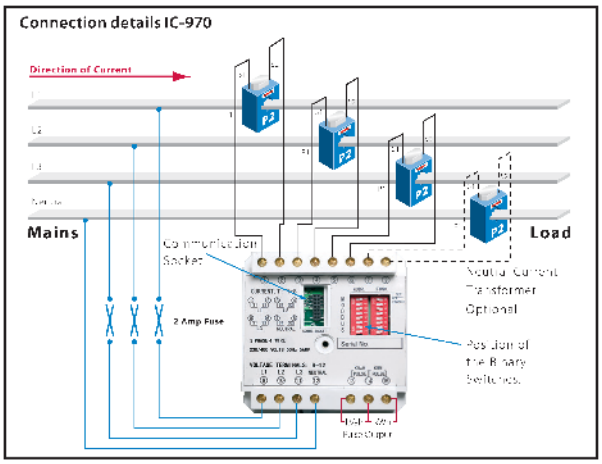
Installation of the Meter

Location

The IC 970 meter should be mounted in a dry, dirt free environment away from heat sources and very high electric fields. Temperatures should not exceed 50°C or fall below -10°C.

Installation

The IC 970 meter should be installed by a competent and qualified electrician. The IC 970 meter is a panel mounted meter designed to be installed into a switch board panel or enclosure with an square aperture of 92 x 92 mm where all the terminals care concealed.



Wiring Information

Power Supply

The standard IC970 meter is powered by 230 volts AC (47-66 Hz) internally on terminal 11 (L3) and terminal 12 (neutral).

Wiring

Electrical and communication connections are made directly to the back of the meter.

The voltage and current connections are made to terminals 1-12, pulse outputs connections are made to terminals 13-15.

Electrical Connections

2.5mm flexible stranded cable is recommended for all main electrical connections. For the low voltage communication connections we recommend a twisted shielded cable Belden 9841 2 wire or 9842 4 wire or equivalent.

Phasing and polarity of the AC current and voltage inputs and their relationship is critical to the correct operation.

Programming the Meter

When you receive the meter there will be at least one value that you must programme into the meter. This is the current transformer ratio. If you are monitoring the neutral current then the neutral current transformer ratio will also need to be programmed.

If the meter has been purchased with the communication module you may need to alter the standard protocol set up. See reverse side for communication module set up.

Programming the CT Ratio

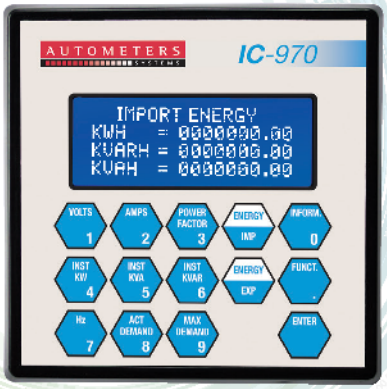
First you must locate the two red binary switches on the back of the meter. See diagram 2 on reverse side.

You will see two sets of RED binary switches with numbers 1-8 on each of them.

SELECT the binary switch with the word "func" above and switch number 8 to the "on" position. This puts the meter into programming mode.

Important

When you have completed programming the meter you must switch number 8 to the "off" position.



To enter the CT Ratio Code 13 (Switch 8 on)

Your Current Transformer Ratio requires to be programmed into this meter. Please follow these instructions precisely.

1. Press Function Key

The display will change to

You will notice the cursor is flashing at the first digit on the left of the two digits

Press the key with **1** on it, the cursor will now move to the next digit, now press **3**.

2. Press Enter

The display will change to

Enter the current transformer value by pressing the numbers which are on the front of the key pad. The cursor will automatically move to the right as you enter the numbers. The cursor will drop down to the NT primary, repeat the previous steps.

When you have completed inputting the value of the current transformers.

3. Press Enter

This will programme the meter and take you back to the default register.

To check you have programmed the correct value press the Information key continuously until you reach the correct screen.

Please Note

When setting the C.T or N.T ratios and you have only three digits you must enter "0" as the first digit. E.g. 100/5 would be entered as 0100/5.

To check the connections on the meter code 50 (View)

Please follow these instructions precisely.

1. Press Function Key

The display will change to

You will notice the cursor is flashing at the first digit on the left of the two digits

Press the key with **5** on it, the cursor will now move to the next digit, now press **0**.

2. Press Enter

The display will change to

The display will indicate what the meter is sensing.

If you have connected the meter correctly you should see above display.

If you see **L1, L2 or L3 SHOWING "EXP"** this indicates that one or more current transformers are not connected correctly. This must be corrected to ensure accurate meter readings.

If you see **V1, V2** or **V3** showing **"LOW"** check your voltage connections and the actual voltage on the terminals. This must be corrected to ensure accurate meter readings.

3. Press Enter

The meter will automatically take you back to the default display.

AUTOMETERS SYSTEMS

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Programming the Communication Module

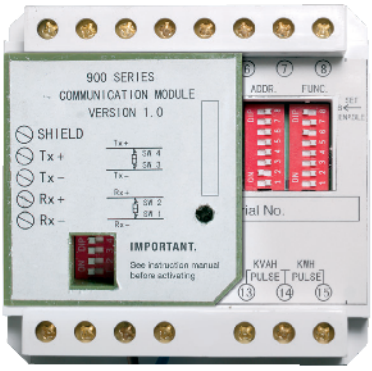


diagram 2

You will notice in the picture two red vertical rows of switches 1 - 8. Above each row the letters "ADDR" and "FUNC" are printed. These individual switches will have to be selected to programme the correct protocol in the meter. See below.

You will notice two red binary switches next to each other, one is marked "ADDR" and the other switch is marked "FUNC".

"ADDR" Binary Switch

The binary switch on the left is marked "ADDR" and is for setting the meters address number. Each meter in the Modbus system must have its own unique number.

The binary switch has 8 switches numbered 1-8.

The number sequence is as follow.

1 = 1	3= 4	5= 16	7 = 64
2= 2	4= 8	6= 32	8 = 128

E.G. by moving the number 1 switch to the "on" position you have numbered this meter as 1. By switching numbers 1 and 4 to the "on" position this becomes number 9. The highest number which you can allocate to a meter is 128.

"FUNC" Binary Switch

This switch is for setting the individual parameters for the Modbus settings.

Switches 1 and 2: Baud Rate Setting.

Off	-	off	=	9600
On	-	off	=	19200
Off	-	on	=	38400
On	-	on	=	1200

Switch 3: Wire Mode

OFF = 2 wire.
ON = 4 wire.

Switch 4: Modbus Type

OFF = RTU.
ON = ASCI.

Switch 5: Parity Type

OFF = Even.
ON = Odd.

Switch 6: Data Format

OFF = ASCII String.
ON = Floating Point.

Switch 7: Floating Point Format

OFF = High word first.
ON = Low word first.

Switch 8: Special Switch For Programming The Functions Into The Meter

ON = Programming function on.
OFF = kWh impulse with output relay.

Important

The power must be switched off when fitting a communication module to the meter.

Communication Connections

RS 485 Connection

This connection should be made using the appropriate screened twisted pair cable (Belden 9841, 2 wire or 9842 if using 4 wires or equivalent). It is imperative that the terminals are wired as per the diagrams opposite.

CE Approval

The IC 970 has been fully examined and tested in accordance with the standards listed and meets the specified requirements defined in BS EN 61326:1997 inc A1, A2, A3 - Electrical equipment for measurement, control and laboratory use - EMC requirements.

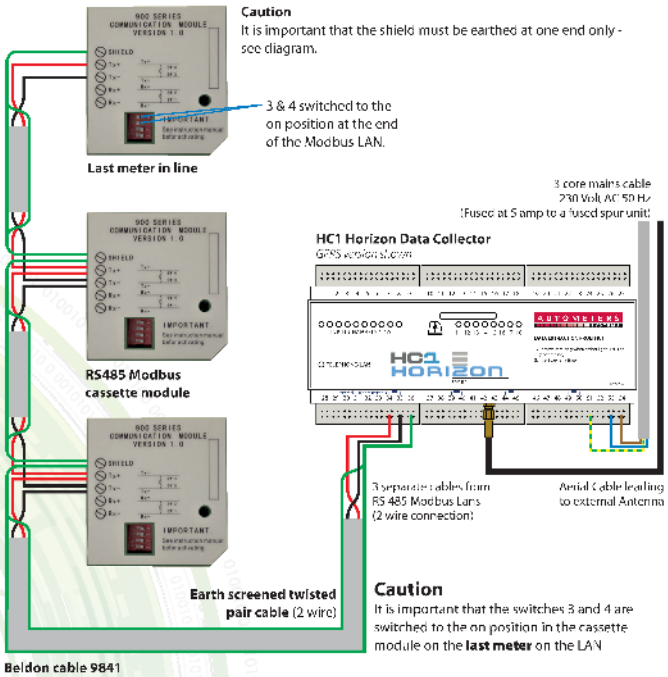
1. BS EN 61326:1997 inc. A1, A2 & A3 — Conducted Emissions
2. BS EN 61326:1997 inc. A1, A2 & A3 — Radiated Electricity Field Emissions
3. BS EN 61000-4-2:1995 inc. A1 & A2 — Electromagnetic Compatibility
4. BS EN 61000-4-3:2002 inc. A1 & A2 — Electromagnetic Compatibility
5. BS EN 61000-4-4:1995 inc. A1 & A3 — Electromagnetic Compatibility

Safety Standards: BS EN 61010-1:2001

Important

The attention of the specifier, purchaser, installer or user is drawn to special measures and limitations to use which must be observed when these products are taken into service to maintain compliance with the CE directives. Details of these special measures and limitations of use are available from HMSO.

REF: IEC 1000-5-1(BS195/210788DC) IEC 1000-5-2 (BS 195/214642DC) IEC 10000-5-6 (BS 195/210789DC).



WARNING DO NOT MEGGAR TEST

For full and in depth details on the IC-970 please go to our website *www.**autometers**.co.uk*

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