Quick Reference Guide
IM/AMG/QRG_4

Electronic Commercial Water Meter with Integral Logger

AquaMaster™

ABB

The Company

We are an established world force in the design and manufacture of instrumentation for industrial process control, flow measurement, gas and liquid analysis and environmental applications.

As a part of ABB, a world leader in process automation technology, we offer customers application expertise, service and support worldwide.

We are committed to teamwork, high quality manufacturing, advanced technology and unrivalled service and support.

The quality, accuracy and performance of the Company's products result from over 100 years experience, combined with a continuous program of innovative design and development to incorporate the latest technology.

The UKAS Calibration Laboratory No. 0255 is just one of the ten flow calibration plants operated by the Company, and is indicative of our dedication to quality and accuracy.

EN ISO 9001:2000

Cert. No. Q5907

EN 29001 (ISO 9001)

Lenno, Italy – Cert. No. 9/90A

Electrical Safety

This equipment complies with the requirements of CEI/IEC 61010-1:2001-2 'Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use'. If the equipment is used in a manner NOT specified by the Company, the protection provided by the equipment may be impaired.

Symbols

One or more of the following symbols may appear on the equipment labelling:

	**Warning –** Refer to the manual for instructions
	**Caution –** Risk of electric shock
	Protective earth (ground) terminal
	Earth (ground) terminal

	Direct current supply only
	Alternating current supply only
	Both direct and alternating current supply
	The equipment is protected through double insulation

Health and Safety

To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

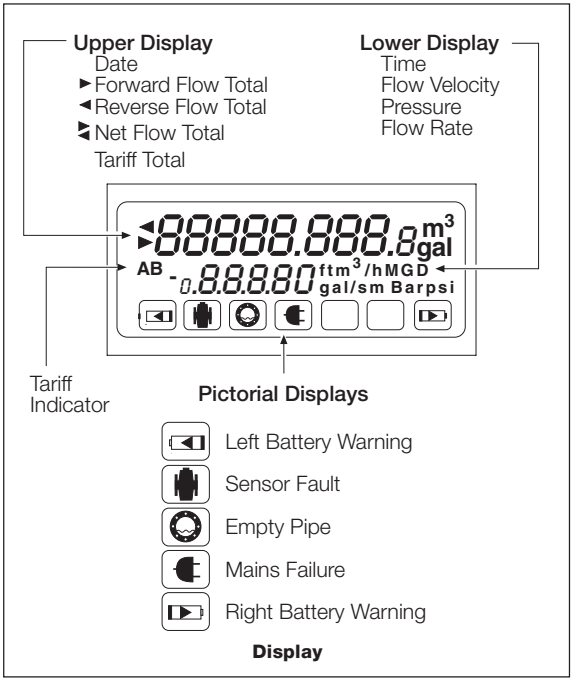
CONTROLS AND DISPLAY

This Quick Reference Guide is applicable to product firmware version 2.20 or above. Features applicable to the GSM option are only present on version 2.30 or above. Some advanced features are only present in version 2.40 or above. The transmitter version number can be obtained by keying >0 ↵

When the unit is taken out of storage and installed for first use, remove the protective label (if fitted) from the front to allow light to activate the unit.

If the instrument is not powered, connect any batteries or external supply as detailed in the Installation Manual.

Important. Read the manual for battery condition monitoring.



Display

Setting up the PC – HyperTerminal Setup

(Example from Windows NT – other versions of Windows may vary)

From the Windows Start **menu** select **Programs – Accessories – Communications – HyperTerminal**.

At 'New connection' enter : AquaMaster

At 'Connect using' choose : COM1 or COM2 (depending on the PC connection)

At 'Port setting' prompt choose Bits per second: 4800, Data bits: 8; Parity: None; Stop bits: 1; Flow control: none.

Programming the AquaMaster

To access programming mode, connect the AquaMaster to a computer via either of the serial port connections (but note that the GSM-equipped version does not have a remote port) – see Instruction Manual ('Local or Remote Computer Connection' sections).

Use serial port settings: Baud: 4800; Data bits 8; Stop bits: 1; Parity: no.

Press **Tab** 3 times to activate the programming mode.

The following display appears on the computer screen:

AquaMaster…

Nav Mode: TAB, Disp Mode: Ctrl + W

Pressing the **Ctrl** + **W** keys simultaneously initiates display mode, with the same information as that on the transmitter display.

Press **Esc** to cancel display mode.

Pressing the **Tab** key produces the following screen:

[Next Menu=TAB][Next Item=ENTER]

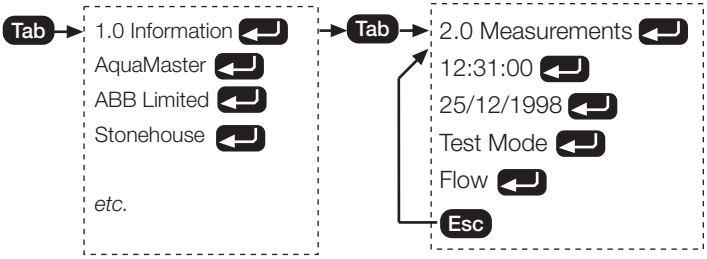
[Edit = SPACE][Exit = ESC]

1.0 Information

Further key operations access the menus as follows:

Key

= Menu Displayed Text; = [User entered data] ; = **Function Key**



Note. Pressing **M** within a menu displays all the remaining parameters immediately.

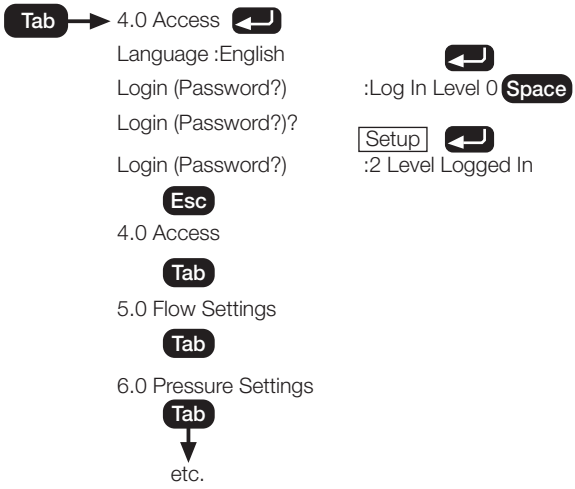
SECURITY ACCESS

There are two levels of password control:

Level	Default Password	Menus
2	setup	1 to 7
4	am2k	1 to 13

Note. Passwords are case-sensitive and may be changed by the user in menu 4.0.

Logging In



Tab → Flow Units : l/s Space
Flow Units? l/s Space (Repeat space function key until required units are displayed)
Flow Units? l/m
Flow Units : l/m ↵
↵
FSD(100% or URV) 200 l/m

Note. Use Esc to escape or cancel in input mode, or to exit a menu.

Changing Selections

Note. Ensure that the correct access level is selected.

It is possible to enter data directly into the AquaMaster without navigating the menu system. This is achieved by using the 'Command Line Interface' (CLI). To read the value of a variable, type > followed by the variable number (see overleaf), then press ↵.

To write a new value to a variable, type >, the variable number, = and the new value required, followed by ↵. In both cases the AquaMaster will reply with the new value of the variable (or a reason for failure) e.g.:

Where:

>217 ↵ <0>217=42

>217=42 ↵ <3>217=Write Access Denied

217 is the number for the flow rate

<0> is the error code for 'no error'

42 is the current flow rate

<3> is the error code for 'Write Access Denied', since writing to the flow rate is not allowed.

To change the flow FSD to 10 m^3/min:

To cancel the password security, press Esc until the front screen is reached.

		Comments
>248=setup ↵	<0>248=2 logged in	enter password
>112 ↵	<0>112=1 l/s	read present flow units
>115 ↵	<0>115=250	read present fsd
>115=10 ↵	<0>115=10	set new fsd value of 10
>112=6 ↵	<0>112=6 m^3/m	set units to number 6 (m^3/min)

Go To Menu

This procedure is only available on v2.30 or above.

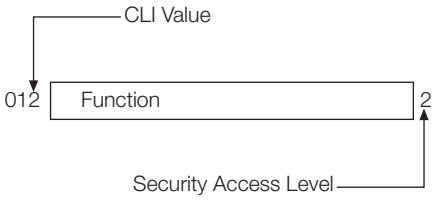
To quickly navigate the AquaMaster menu structure, assuming that the menu system has been activated (by pressing Tab 3 or 4 times) and that a suitable login level has been obtained, go to a given Menu by typing its number followed by Tab:

E.g. to go to menu 12 type:

12 Tab and AquaMaster menu 12 will now be accessible:

12.0 GSM Comms Settings

MENU LAYOUT – ALL VERSIONS



	1.0 Information		
199	AquaMaster		R
200	ABB Limited		R
201	Stonehouse		R
202	England, UK, GL10 3TA		R
203	tel +44 (0)1453 826661		R
204	flow@gb.abb.com		R
163	Owner	:	2
162	Location	:	2
206	Message	:	2
	Flow Sensor		R
1	I.D.	:	R
17	Contract	:	R
8	Meter Type	:	R
27	Cal. Date	:	4
28	Cert. No.	:	4
33	Flow Tag/Site ID	:	4
237	Bore (mm)	:	R
21	Lining	:	R
22	Electrodes	:	R
23	Flanges	:	R
24	Body	:	R
	Pressure Sensor		
171	I.D.	:	4
196	Cal. Date	:	4
197	Cert. No.	:	4
189	Contract	:	4
191	Wetted Parts	:	4
192	Seals	:	4
	Transmitter		R
207	I.D.	:	R
208	P.I.N.	:	R
209	Contract	:	R
212	Transmitter Tag	:	2
	Exit	:	0

	2.0 Measurements		
253	Time	:	4
254	Date	:	4
233	Test Mode	:	4*
246	Alarms	:	4
217	Flow	:	R
218	Flow %	:	R
219	Velocity	:	R#
222	Pressure	:	4
223	Pressure %	:	4
258	Pulse Output	:	R
224	Fwd	:	4Z
225	Rev	:	4Z
226	Net	:	4Z
227	Tariff A	:	4Z
228	Tariff B	:	4Z
231	Left Batt. (Days)	:	R
232	Right Batt/Mains (Days)	:	R
245	Prev. Left Batt. (Days)	:	R
299	Prev. Right Batt. (Days)	:	R
234	Sig A (kohm)	:	R
235	Sig B (kohm)	:	R
	Exit	:	0

* Test Mode sets the flow velocity to 1 m/sec for test purposes. Only affects Fwd, Rev, Net totalisers and Pulse Output.

Z Reset to Zero only.

\# Velocity units may be altered to ft/s as follows (Write Level Access 2):
>109=5 **<0>109=5 ft/s**
>109=1 for m/s

	3.0 Display Options		
52	Fwd	:	0
53	Rev	:	0
54	Net	:	0
55	Tarriff A	:	0
56	Tarriff B	:	0
59	Flow	:	0
60	Velocity	:	0
61	Pressure	:	4
62	Date/Time	:	0
159	Date Format	:	2
	Exit	:	0

Date Formats

DDMMYY
YYMMDD
MMDDYY

Note: Enter a new date in the same format as it is displayed, e.g. 2001/3/27

If the year is entered as two digits, it will be assumed to be in the range 1990 to 2089 inclusive.

	4.0 System Access		
161	Language	:	4
248	Login (Password)	:	0
249	Change Password	:	4
250	Current Password	:	4
251	New Password	:	4
252	Confirm New Password	:	4
	Exit	:	0

	5.0 Flow Settings		
112	Flow Units	:	2
115	FSD (100% or URV)	:	2*
116	Zero (0% or LRV)	:	2
118	Cutoff (%)	:	2*
37	Totalizer Units	:	4
67	Pulse Units	:	2
68	Pulses/Unit	:	2
69	Pulse Max Freq.	:	2
113	Special Units (per m^3/s)	:	2
114	Special Flow Name	:	2
38	Special Units (per m^3)	:	4
39	Special Totalizer Name	:	4
	Exit	:	0

*Only affects Fwd, Rev, Net totalizers and Pulse Output.

Flow Units		Totalizer Units or Pulse O/P Units
Special	Gal/m	Special
l/s	Gal/h	l
l/m	MGD	m^3
l/h	ft^3/s	Gal
MLD	ft^3/m	ft^3
m^3/s	ft^3/h	Ml
m^3/m	Ugal/s	
m^3/h	Ugal/m	
m^3/d	Ugal/h	
Gal/s	MUGD	

	6.0 Pressure Settings (see Notes)		
66	Mode	:	2
119	Pressure Units	:	2
122	FSD (100% or URV)	:	2
123	Zero (0% or LRV)	:	2
120	Special Units (per Bar)	:	2
121	Special Pressure Name	:	2
	Exit	:	0

Units

Special	mm Hg
Bar	mm H_2O
mBar	psi
kPa	ft H_2O

	7.0 Outputs		
70	Output 1	:	4
71	Output 2	:	4
	Exit	:	0

Output 1	Output 2
Off	Off
On	On
Pulse Fwd	Pulse Rev
Pulse F+R	Fwd
	Rev

	8.0 Pressure Transducer Setup		
178	Pressure FSD Bar	:	4
176	Mode	:	4
255	Offset (mm)	:	4
257	Pres. Response Time	:	4
193	Span Trim	:	4
194	Zero Trim	:	4
196	Cal. Date	:	4
197	Cert. No.	:	4
179	Factory FSD (mV/V)	:	4
180	Factory Zero (mV@3V)	:	4
186	First Fact. Cal.	:	4
187	Last Fact. Cal.	:	4
188	Cert. No.	:	4
	Exit	:	0

	9.0 Flow Cal		
30	Profile Factor	:	4
31	Insertion Factor	:	4
32	Probe Pipe Bore (mm)	:	4*
102	Mode	:	4
256	Flow Response Time	:	4
25	Flow Span Trim	:	4
26	Flow Zero Trim (0.01mm/sec)	:	4
27	Cal. Date	:	4
28	Cert. No.	:	4
	Exit	:	0

* This parameter is ignored if the sensor is not an insertion probe (AquaProbe).

	10.0 Tariff Control		
42	Daily Cycle Start Time	:	4
43	Daily Cycle End Time	:	4
44	Weekly Cycle Start Day	:	4
45	Weekly Cycle End Day	:	4
46	Yearly Cycle Start Date	:	4
47	Yearly Cycle End Date	:	4
40	Mode	:	4
41	Units	:	4
	Exit	:	0

Note. See page 10 for notes on tarriff control.

	11.0 Logger		
166	Logger 1 Interval (s)	:	4
168	Logger 2 Interval (s)	:	4
405	Totaliser Logging Hour	:	4*
	Exit	:	0

* Only present in V2.40 and above

GSM Versions (v2.4x Software)

	12.0 GSM Comms. Settings		
368	GSM Module Status	:	R
367	SIM Access Lock	:	4
357	SIM ID Number	:	R
355	SIM Password	:	4
366	Network	:	R
365	Signal Log (new –> old)	:	R
349	Total Connect Time	:	4
354	Signal Test Wait Time(s)	:	4
358	Manual GSM Session	:	4
	Periodic Wakeup Settings		
351	WakeUp Base Time	:	4
347	WakeUp Base Day	:	4
353	WakeUp Schedule	:	4
352	WakeUp Duration	:	4
	Exit	:	0

	13.0 SMS Services		
362	Auto Report Phone No. 1	:	4
382	Auto Report Phone No. 2	:	4
391	Auto Report Phone No. 3	:	4
	Text Auto Reports		
394	Destination	:	4
361	Text Report Schedule	:	4
363	Command String	:	4
	Flow/Pressure Log		*
395	Destination	:	4
388	Flow Report Schedule	:	4
385	Flow Report Units	:	4
389	Pressure Report Schedule	:	4
386	Pressure Report Units	:	4
	Totaliser Auto-Reports		*
400	Destination	:	4
399	Totaliser Report Schedule	:	4
	Alarm Auto-Reports		
401	Destination	:	4
402	Alarm Reports Enabled	:	4
	Exit	:	0

* Log and Alarm reports can not be sent unless the unit has been supplied from the factory with the SMS logging option enabled (parameter 406=1).

TARIFF CONTROL

Notes toTariff Control:

The Tariff Control menu is used for defining Tariff A only.

Tariff B is always the opposite of Tariff A.

Daily Cycle Start Time defines the start of normal day time.

Weekly Cycle Start Day defines the first day of the weekend (from 00:00). Weekly Cycle End Day defines the first day of the week (at 00:00).

[e.g. for a normal weekend (Saturday and Sunday only) set Weekly Cycle Start Day = Saturday and set Weekly Cycle End Day = Monday]

To use a Yearly Cycle set Weekly Cycle Start Day = None and set Weekly Cycle End Day = None.

Yearly Cycle Start Date defines the day and month of the start of summer. Yearly Cycle End Date defines the day and month of the start of winter.

Weekly Cycle Defined		
Mode	**Tariff A**	**Tariff B**
1	Day time during weekend	Night time at weekend + day and night during week
2	Day time during week	Night time during week + day and night during weekend
3	All day times	All night times
4	Night time during weekend	Day time during weekend + day and night during week
5	Day and night during weekend	Day and night during week
6	Day time during week + night time during weekend	Night time during week + day time during weekend
7	All day times + night time during weekend	Night time during week

Yearly Cycle Defined (Weekly Cycle = None)

Mode	Tariff A	Tariff B
1	Day time during summer	Night time during summer + day and night during winter
2	Day time during winter	Night time during winter + day and night during summer
3	All day times	All night times
4	Night time during summer	Day time during summer + day and night during winter
5	Day and night during summer	Day and night during winter
6	Day time during winter + night time during summer	Night time during winter + day time during summer
7	All day times + night time during summer	Night time during winter

Access via GSM

Commissioning test for signal strength

This provides a means of carrying out a radio signal test for selecting the optimum location for the antenna. The system can be tested in its final commissioned location and state (e.g. manhole cover closed and any local comms equipment disconnected from the meter, etc).

Menu 12 controls the GSM features.

Go to Menu 12 and select the Signal Test Wait Time [>354]. Enter here the time in seconds that the system will wait before starting the signal test. A count down starts from the selected Wait time to zero. This count down is shown on the LCD Display. At this point the installation should be closed up into its commissioned state. When the count reaches zero, a radio signal strength measurement is taken and the result is shown on the Display for 30 seconds (long enough to open the door or meter cover to inspect the result).

The highest signal strength is represented by a value of 31; the poorest strength is a value below 5.

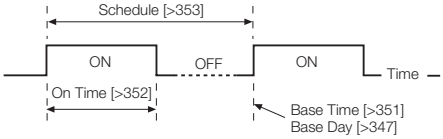
SIM Numbers

Data-enabled SIMs sometimes have both a Voice Telephone Number and a Data Telephone Number. In such cases, use the Voice Number for Remote Access via SMS Text; use the Data Number for Remote Dial Up operation e.g. using LogMaster.

GSM WakeUp Control

Battery-Powered Meters

To conserve battery power, the GSM radio module is normally powered down. To operate remote communications (SMS Requests, Auto Report or Remote Dial Up), the GSM radio module can be woken either by going to menu 12 and requesting a Manual Wakeup [>358=1] - which forces the module to wake up for the WakeUp Duration [>352] - or by setting a programmable WakeUp schedule as shown in the following diagram. The WakeUp Schedule [>353] can be programmed for wake ups every 12 hours, 1 day or Always Off. The Base Time [>351] sets the time of day for the wake ups. The Base day [>347] sets the day of the week for the Auto Reports.



Mains Powered Meters

When the meter is mains powered, the GSM radio module is continuously powered and is able to handle remote communications (SMS Requests, Auto Report or Remote Dial Up). If mains power is interrupted and the meter is powered from the back up battery, the GSM module will not operate.

> **Note**. On mains powered GSM units the module is automatically rebooted at midday every day. This process takes approx 1 minute and it is therefore recommended that the Base Time should be set to avoid the period around midday.

WakeUp Duration

The power supply to the transmitter may have been ordered as one of the following types :

Mains with Battery Backup

Battery only (dual internal cells)

External Battery Pack with Backup

For Mains powered units with battery backup, the WakeUp Duration does not apply as the GSM module is either continuously powered (whilst there is mains power present) or not powered (whilst on backup battery).

For Battery only units, powered either by 2 internal cells or by an external battery pack, the WakeUp Duration (>352) has a range of 3 to 23 minutes.

Status

GSM Module Status

GSM Module Status [>368] shows the current GSM radio module status as one of:

0 = Not Configured
1 = Off
2 = Off (SIM not fitted)
3 = Ready
4 = Waiting PIN
5 = Waiting PUK
6 = Waiting Antitheft PIN
7 = Waiting Antitheft PUK
8 = Waiting PIN2
9 = Waiting PUK2
10 = SMS Mode
11 = Command Handling
12 = Connecting
13 = Connected

Signal Strength (current value)

The Signal Strength parameter [>348] may be used to obtain the radio signal strength on demand.

e.g. >348<0>=16

Signal Log (Signal Strength History)

A signal strength reading is taken each time the module is powered up (or daily for a mains powered unit). The last 7 signal strength readings can be examined using Signal Log in Menu 12 [>365]. The most recent reading is to the left.

i.e. 16 is the most recent reading in this example:

<0>365=16 14 14 13 12 14 14

Total Connect Time

Accumulated connection (call) time can be obtained using the Total Connect Time parameter in Menu 12 [>349]. It is given in hh:mm:ss and excludes SMS text activity.

Access via SMS Text Message

A transmitter with the GSM option also provides a means of accessing AquaMaster data via SMS text messaging. An SMS Request Text can be sent from a mobile phone to AquaMaster and an SMS Reply Text with the requested information will be sent to the originating phone or SMS gateway. If the AquaMaster is battery powered, the SMS Request will not be serviced until the next programmed WakeUp time as defined in Menu 13.

SMS Request Message

SMS Request messages must have the following format:

+password;command;command;...;command;

Where:

+password is the character + followed by the AquaMaster login password [>248] and the command may be:

Either:

Any of the AquaMaster Parameter Access Commands:

FLW	Rate Of Flow
VEL	Rate Of Velocity
PRS	Pressure
ALM	Alarm
TOF	Total Volume Forward
TOR	Total Volume Reverse
TON	Total Volume Net
TFA	Tariff A
TFB	Tariff B
TIM	Time and Date

or

any regular Command Line Interface requests

e.g.: >365

to show the last 7 Signal Strength readings.

Example

Sending:

+user;FLW;PRS;TOF;TFA;TIM;>365;

results in a reply similar to:

-AquaMaster;ABB01M; Flow=-157.93 l/s; Pressure=-0.619765 Bar; TOT Fwd=16853 m3; TRF A=1866 m3; TIME=00:00:01 08-07-03;<0>365=14 14 14 13 12 14 14;

SIM Access Control

This section describes the steps to change the GSM module's SIM PIN and Access Lock status. Since SIM Access Lock and SIM PIN are both held in the SIM they can also be changed by inserting the SIM into a mobile phone and following the steps to change it, usually found in phone setting security menus. However it should be noted that where the AquaMaster is potted the SIMs may not be able to be removed and security setup can then only be done via the AquaMaster.

SIM and PIN access via the AquaMaster first require that the user has logged in at level 4. Since these features are related to the security of the SIM it is recommended that the customer changes the level 4 password from the default setting. This can be done via menu 4.

> **Note**. The PIN can only be changed via the local computer connection. It cannot be changed via GSM.

Access Lock

When the SIM Access Lock is enabled, the PIN is required to be sent to the SIM each time the GSM module is powered up. Once the PIN has been accepted the SIM can be accessed as normal.

If an incorrect PIN is sent to the SIM then a number of retries are allowed (SIM dependent, but usually a further two attempts). If no correct PIN was received by the module in this time then the SIM will be locked and can only be recovered with its PUK (a one-time unlock key that is obtained from the SIM's service provider).

PIN

The PIN is the password that is needed to access the SIM if the Access Lock is enabled. If the AquaMaster detects that the GSM module requires a PIN for access then it will send the string that has been set up to use in SIM Password [>355].

If the AquaMaster has not had the SIM Password set or if the password is incorrect then the GSM Module Status [>368] will report 'Waiting PIN' or a similar message when the GSM module is powered up.

[If the SIM Password is '-' then no string will be sent to the GSM module. This is because it is not possible to have an empty variable string in the AquaMaster Menu]

When viewed, the SIM Password will display the actual PIN string for login levels 4 and above. For login levels 3 and below it will be displayed as a number of asterisks (*) - one asterisk for each digit of the PIN.

Setting AquaMaster to use SIM's existing PIN

Simply change SIM Password to be the PIN of the SIM card.

AquaMaster will automatically use this to send to the GSM module each time it powers the module up. If this is incorrect the SIM will eventually become locked out.

Using AquaMaster to change SIM's PIN

1. Change SIM Password using the format:

   <oldpin>,<newpin>

2. The new PIN can be seen in SIM Password.

3. The GSM module will be re-booted (takes approx. 1 minute). Once it has rebooted, the GSM Module Status should report that the module is 'Ready'.

Using AquaMaster to change a SIM's Access Lock status

This requires that the PIN has already been configured.

Cycle though options via menu item SIM Access Lock [>367]. Using the command line, this can be set to value 0 for 'Lock Disabled' or 1 for 'Lock Enabled'.

[If the AquaMaster does not have a PIN to use, it will not be able to request the SIM Access Lock status and this will be reported as '–' or value 2.]

Using AquaMaster to unlock SIM when a PUK is needed

If a SIM has been 'locked out' through repeated attempts to access with an incorrect PIN then the GSM Module Status will report 'Waiting PUK' or a similar message. The required PUK can be obtained from the SIM's service provider.

1. Change SIM Password using format:

   <puk>,<newpin>

2. The new PIN can be seen in SIM Password.

3. The GSM module will be re-booted (takes approx. 1 minute). Once it has rebooted, the GSM Module Status should report that the module is 'Ready'.

Note. The SIM password cannot be changed via Remote port.

Auto Reports

This feature sends information via SMS text messages from an AquaMaster to a programmed number on a regular schedule. The Base Time and Day used for the scheduling are the same as those used for the WakeUp system.

Other control parameters are located in Menu 13:

Auto Report Phone No 1 (or 2 or 3)

AutoReport SMS text messages can be sent to any one of three SMS telephone numbers, designated as Auto Report Phone No 1, Auto Report Phone No 2 and Auto Report Phone No 3. Telephone numbers should be entered as they would normally be dialled, with no spaces, using either the full international format (e.g. +441453123456 or 00441453123456) or the area code and number (01453123456) as appropriate.

Each type of Auto Report has its own section of the menu for configuration and can be sent to either the same number or to different numbers. These are selected by the Destination parameter in each section as Phone No. 1, Phone No. 2 or Phone No. 3.

Text Auto-Reports

The AutoReport message is defined in AR Command String [>363]. This uses commands from the AquaMaster's Parameter Access command set.

e.g.: >363=TON;TFA;

This sets up AutoReport to send the Net Total and the Tariff A Total.

Text Report Schedule

The Text Report schedule (>361) can be set to any one of the following options:

0 Off

1* 30 minutes (on the ½ hour)

2* 1 hour (on the hour)

3* 2 hours (on the "even" hour)

4 Daily (every day at WakeUp Base Time)

5 Weekly (every WakeUp Base Day at WakeUp Base Time)

6 Monthly (1st day of each month, at WakeUp Base Time)

* These options are only functional for mains Powered units; whilst on battery power, these Options behave as "off".

Flow and Pressure Log Auto-Reports

> **Note**. Log and Totaliser reports can not be sent unless the unit has been supplied from the factory with the SMS logging option enabled (parameter 406=1).

SMS messages containing Flow and/or Pressure data from Logger 1 for the previous 24 hours can be automatically sent by the AquaMaster to one of the three specified phone numbers.

If a schedule for Flow Log Reports is set and if Logger 1 is set to a 15 minutes logging interval, the last 24 hours Flow data will be contained in a single SMS message. If a shorter interval is specified and therefore there are more data points in the log, then the amount of data may require multiple messages to be sent.

Similarly, if a schedule for Pressure Log Reports is set, then separate message(s) containing Pressure Data are sent to the same phone number.

Flow Report Units (>385) and Pressure Report Units (>386) specify the engineering units used in the reports. Pressure Reports always give the pressure in gauge units.

Flow and Pressure Report Schedules

> **Note**. Log and Totaliser reports can not be sent unless the unit has been supplied from the factory with the SMS logging option enabled (parameter 406=1).

The Flow Report Schedule (>388) and Pressure Report Schedule (>389) can be set to either of the following options:-

0 Off

1 Daily (every day at WakeUp Base Time)

Totaliser Auto-Reports

> **Note**. Log and Totaliser reports can not be sent unless the unit has been supplied from the factory with the SMS logging option enabled (parameter 406=1).

This report if enabled sends the instantaneous values (at the WakeUp Base Time) of all the totalisers in the transmitter (i.e. Forward, Reverse, Net, Tariff A, Tariff B)

Totaliser Report Shedule

The Totaliser Report Schedule (>399) can be set to any one of the following options:-

0 Off

1 Daily (every day at WakeUp Base Time)

2 Weekly (every WakeUp Base Day at WakeUp Base Time)

3 Monthly (1st day of each month, at WakeUp Base Time)

Alarm Auto-Reports

This controls the sending of a report should any one or more of these events occur:

- A sensor error
- A coil error
- A power supply error to the coil drive
- A battery alarm

If the Alarm Reporting (>402) has been enabled, then on any of the above errors an immediate alarm report is generated and sent via GSM to the phone number referred to in Destination (>401). This is provided that there has been no Alarm Report sent out during the last 24 hours (i.e. no alarm flag present) & more than 24 hours has passed since start-up.

Regardless of the GSM Wake-up time, the GSM module is triggered and the report is sent. If the alarm flag is still present at the time of a scheduled text auto-report, then the alarm field is appended at the end of the Auto-Report, regardless of whether it is already included in the 'Command String'.

If Alarm Reporting (>402) has been disabled , then no report is generated.

PRODUCTS & CUSTOMER SUPPORT

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- *Zirconia oxygen analyzers, katharometers, hydrogen purity and purge-gas monitors, thermal conductivity.*

Customer Support

We provide a comprehensive after sales service via a Worldwide Service Organization. Contact one of the following offices for details on your nearest Service and Repair Centre.

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Client Warranty

Prior to installation, the equipment referred to in this manual must be stored in a clean, dry environment, in accordance with the Company's published specification. Periodic checks must be made on the equipment's condition. In the event of a failure under warranty, the following documentation must be provided as substantiation:

1. A listing evidencing process operation and alarm logs at time of failure.
2. Copies of all storage, installation, operating and maintenance records relating to the alleged faulty unit.

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The Company's policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice.
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