

Draft for Comment



Automated Meter Reading (AMR) Services
ASP Code of Practice for Gas Meters

Version 0.7 (Draft)

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Document Management

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0.7	Addition of Installer Syllabus , changes to governance and added ASP ID codes	Alan Jones	02/04/09

Scope

This Code of Practice (CoP) is aimed at Automatic Meter Reading (AMR) Service Providers (ASPs), who provide data relating to gas consumption from non-domestic meters. The CoP is hereafter referred to as the ASPCoP.

This is a voluntary CoP, in that it is not underpinned by legislation and therefore does not confer any new obligations or rights on any party. Its purpose is to inform both stakeholders of best practice and establish minimum standards.

Therefore the overarching aim of this document is to detail the minimum technical requirements and deliverables relating to delivery of non-domestic sector gas (meter or Converter) consumption and interval data. Compliance with the ASPCoP will recognise a level of accreditation to the service provider.

The ASPCoP is designed to cover all requirements to be undertaken by an ASP but does not cover commercial and business information flows required between the Supplier, MAM or contractual requirements.

Background and Drivers

Although the ASPCoP is voluntary, there is pressure from the market to reduce cost, have a level of interoperability and better quality of data to meet the UK Government requirement on suppliers in the provision of advanced metering for larger read gas sites in the non-domestic sector.

In the gas market this affects all consumers in the consumption range 732 MWh and 58,600 MWh per annum.

The Government will modify Supplier's licence conditions to make this requirement an obligation starting 6th April 2009 to state "the Gas Meter installed at the relevant premises must be an advanced meter".

For the purposes of this condition, an advanced meter is a Gas Meter that, either on its own or with an ancillary Logger, and in compliance with the requirements of any relevant Industry Code, is able:

(a) to provide measured gas consumption data for multiple time periods, and at least hourly; and

(b) to provide remote access to such data.

AMR is the technology of automatically collecting data from utility meters and transferring that data to a central database for billing, analysing or other added value purposes. The term AMR can refer to various types of solution and communication means and can support various meter read periods.

When applied to gas meters the normal practice is to attach a device (logger) to the meter without interruption to the supply of gas to the end consumer so eliminating the need for an AMR installer to have gas meter installation skills.

AMR Service Providers (ASPs) are businesses or organisations that offer provision of meter reads collected through an AMR system to consumers or gas suppliers or transporters.

Key Objectives of the CoP

The aim of this Code of Practice is to provide guidance for the operation of an ASP business that provides AMR services to consumers or gas suppliers. Adherence to the ASPCoP ensures the ASP operates to an appropriate minimum standard in particular conduct of the operation, conformance with industry standards, equipment installation and integrity in the processes of meter reading, data collection, data processing, adjustment, collection and data delivery. Consumers and gas suppliers will be able to engineer systems to receive AMR collected meter reads compliant with a standard data format and to a known quality level. The aim, where possible, is to use open standards and enable competition between market participants.

The ASPCoP does not seek to restrict the commercial practice of ASPs but instead sets a minimum standard that all ASPs must demonstrate to be compliant. An AMR provider who does not seek or obtain this accreditation may still use an industry legacy accepted processes and flows of data.

The aim is:

- To provide confidence and reduce risk to consumers and gas suppliers such that when they purchase an AMR service from an accredited provider they know it will be compliant and operate to a set of agreed and defined industry standards.

To enable competition, where possible by use of “open standards”

- To promote interoperability that will result from the definition of a common data format.
- To provide reliable data, safe installation and interoperability.

In the ASPCoP, the terms “should” and “shall” have the following meanings:

- The term “should” prescribes a procedure that is intended to be complied with in the interests of best practice unless, after prior consideration and risk assessment, deviation is considered to be acceptable.
- The term “shall” prescribes a procedure that is intended to be complied with in full and without deviation.

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Parties & Stakeholders

AMR Service Providers will be party to this Code of Practice however other gas industry stakeholders will be consulted on views prior to any change to this document.

(N.B. Membership of ESTA is not a prerequisite.)

	Parties/Stakeholders	Description
1	End User	the party using the energy
2	Energy Supplier	the party supplying the energy
3	Customer	the party paying for the equipment and service (this may for example be the End User or Energy Supplier)
4	AMR Manufacturer	the party manufacturing the AMR equipment
5	AMR Service Provider	the party providing the AMR service
6	MAM	the party who manages the Meter asset
7	Shipper / Distributor	the party transporting the energy to the delivery point
8	Auditor	the party that verifies self-certification
9	Ofgem	the regulator
10	ESTA	the author and maintainer of the document
11	DECC	the party replacing Defra and BERR
12	SPAA	Supply Point Administration Agreement

Governance

This Code of Practice may be changed at any time following due consultation with relevant stakeholders by ESTA and reviewed by a technical committee comprising members of ESTA and other industry representatives. Review will take place on a quarterly basis and comments received and administered by ESTA.

The Governance group will comprise 5 members from ESTA and 5 others from interested stakeholders.

Code of Practice Requirements

Safety and Installation

Members of the ASP Code of Practice for Gas Meters must be able to demonstrate that works on any AMR installations are completed in line with expected industry safety and published standards and equipment meet the requirements of the environment in which they are installed i.e. zoning. An ASP shall ensure that all work under its control is undertaken by competent persons as determined by an independently accredited training programme, having the appropriate training, assessment and accreditation.

All equipment shall be installed to a minimum standard by such trained operatives, ensuring such works to comply with any recognised industry standards. A list of safe working practice standards can be found in the Appendix.

Public Liability

All members of the ASP Code of Practice for Gas Meters must demonstrate that they have an appropriate level of Public Liability Insurance.

Accuracy, Assurance and Commissioning

Members of the ASP Code of Practice for Gas Meters shall be able to guarantee accuracy of delivered data and demonstrate they have adequate measures implemented to assure the accuracy of the data they provide. This will allow them to accurately reflect the meter register values to the customer automatically. Code members will therefore be able to demonstrate end to end data integrity within their systems including the AMR equipment capability, data transfer, processing, storage and delivery.

Following the installation and commissioning of new AMR Equipment it is required that members of the ASP Code of Practice for Gas Meters ensure that a subsequent physical read is taken for the purposes of proving. Proving is required where an actual reading is inferred by the counting of pulses from a meter or converter; this will ensure the register value of the meter reflects the value reported by the data delivered by the AMR Service.

Automatic Reading of Data

All members of the ASP Code of Practice for Gas Meters must demonstrate that they or their agents can:

- Automatically communicate with metering installations at sites and acquire and store data from the meters;
- Convert the raw data to energy data and perform validation checks.

AMR Equipment Minimum Capability

For the purposes of meeting gas suppliers' license condition, the equipment when forming part of an advanced Gas Meter installation shall:

- (a) provide measured gas consumption data for multiple time periods, and be able to provide such data for at least hourly time-periods; and
- (b) provide remote access to such data.

The following types of documentation shall be used as appropriate to demonstrate that the logger and ancillary equipment are suitable for the intended use:

- letters of conformance;
- a purchase specification;
- test certificates;
- suppliers' or manufacturers' literature.

A mandatory requirement is the hazardous area certification (i.e. demonstrating conformance to ATEX requirements and CE marking as appropriate for the hazardous area).

Data Integrity

Proof of data integrity is a key requirement therefore the following shall be required:

Data File Format

- Metering Data will be delivered to an industry standard format(s).

Record keeping

- details of each installation are correct and fully recorded (as defined in GM7), including location of the meter and logger, the type of equipment and configuration;
- details are managed in an accessible and auditable manner;
- valid data is being collected (i.e. from the correct metering installation; with the correct parameters and settings);
- data shall be collected, processed and delivered to all relevant *Participants* with the quality and timeliness required that meets the performance criteria specified by *Market Participants*;
- apply and comply with appropriate Quality Systems in providing the services;

- data is backed-up and held in a secure environment, including maintaining an off-site copy of archived Data.

Data Security

All members of the ASP Code of Practice for Gas Meters must have an adequate data protection policy. Such policy shall as a minimum comply with the Data Protection Act.

This should include:

- Having a documented data protection policy available to all Customers;
- Ability to demonstrate that they operate in accordance with such policy;
- Appointment of an Information Protection Officer at a senior level with specific responsibility for data protection.

The ASP should ensure that no third party (other than the ASP and their agents) has access to data collected and/or duly provided as part of the AMR service and that the Customer and their agents or the End User has access to their explicit data. An example Data Protection Policy is included in the Appendix.

Disaster Recovery Procedure

AMR requires the extensive use of computer systems. This makes business operations vulnerable to major problems, ranging from the accidental loss of data to deliberate sabotage. Storage systems can be at risk of theft, virus attack or physical damage through electrical overload, component failure, fire or flood.

Therefore, the ASPCoP requires members shall have a disaster recovery procedure such that in the event of catastrophe the service will be retained and data protected.

The plan shall consider events that have a significant impact on an enterprise's ability to conduct normal business and define the policies and procedures for dealing with various types of disasters that can affect an organisation, especially the organisation's IT (Information Technology) infrastructure. This plan shall include the processes and procedures needed to resume an organisation's operation after a disaster event and will include the following:

- Protection of data by backups and cloning;
- Mirror systems;
- A formal risk assessment in order to determine the requirements for the disaster recovery plan;
- Restoration of all essential and critical business activities;
- Scheduled review to ensure the plan is to be kept up to date to take into account changing circumstances.

Data Access Rights

Subject to contractual terms and any mandatory Supplier license conditions, this CoP recommends that End Users should not be unreasonably restricted from access to data.

All ASP Code of Practice for Gas Meters members will ensure customers and end users have access to information subject to their rights to the data.

Quality System

The ASP shall have in place a formal management system to ensure quality of service and data provision. This shall include the following elements:

- competencies, knowledge, and experience of persons employed;
- management responsibility;
- verification of resources and personnel;
- purchasing policy;
- process control and work management;
- continuous improvement report and corrective action;
- quality records and passing on of information;
- internal quality audits;
- document development;
- training;
- maintenance;
- technical support for customers and installers.

Interoperability data standards

Interoperability will be at the level of a “common” data format. Adoption of the standard data format will make it easier to deploy and manage differing hardware solutions, no matter which products or vendors the organisation chooses.

The industry standard data format shall provide both delivery of consumption and interval data.

Through this interoperability, enterprises will be able to use of the common data format for the purpose of billing, verification, energy management and M & T.

Compliance with Registration Processes (MPU and SPAA)

ASP Code of Practice for Gas Meters members will comply with industry standard registration processes for AMR Assets and data flows.

Approval, Appraisal, and Authorisation by Third Parties

The requirements of any relevant third party relating to approval, appraisal or authorisation of the work shall be established and the third party's work management procedures shall be taken into account prior to installation.

Installation

The requirements of this section are applicable to the installation of loggers and any ancillary equipment. The processes are fully defined by the current edition of IG/GM/7 and fully defined in the appendix of this document. Below are the key points and requirements.

Installation shall be by appropriately qualified and competent persons in accordance with best practice, relevant normative standards, manufacturers' information and appropriate installer's field procedures.

Pre-installation procedures shall include, but not be limited to, ensuring:

- whether there is an existing logger attached or available use of the meter pulse output;
- the installation is to be installed at the appropriate MPRN;
- the logger and any ancillary equipment are suitable for the intended purpose;
- the local environment in the vicinity of the meter installation does not have or introduce any hazard that will compromise the safe and effective operation and use of the installation or logger.

Installation is the process that will ensure that:

- pre-installation checks are undertaken;
- any required formal notifications are made prior to commencing work;
- safe control of work is assured;
- the installation and any ancillary equipment is installed in accordance with best practice;
- the installation and any ancillary equipment is inspected and tested;
- the installation does not have a detrimental effect on other legacy devices;
- statutory and advisory labels are fitted.

Installers shall be aware of the requirements for, and the effect of, any other equipment which is to interface with the meter installation (for example converters, other loggers and BMS systems).

Where known by the Installer, the Installer should ensure the consumer is aware of any parts of the installation which the consumer owns and may be affected and where they are the owner of other equipment in the pulse chain they are expected to ensure it remains accessible and properly maintained.

Records

Installation records shall be maintained throughout the operational life of the complete installation.

Where a logger is connected, removed or exchanged, there is a requirement to record and communicate the information to the MAM and where possible other parties in the pulse chain.

Further details are available in IGE/GM/7.

Duty of Care beyond Asset

It shall be ensured that the installations do not cause a safety hazard to the public during the life cycle of the installation.

The Installers acting on behalf of the ASP shall have procedures in place for reporting any dangerous occurrences as required by the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR).

Any person carrying out installation work who becomes aware of an unsafe or dangerous installation or gas leak during the course of that work, has a duty to inform a responsible person. However, this duty only extends to those issues which are within the competence of the person engaged in work and which it is

reasonable to expect the person to notice through visual inspection or olfactory sense by that person.

Equipment Removal and Disposal

At the end of the operational life of a logger or of any ancillary equipment, appropriate disposal is necessary to complete the cycle of whole life management.

Parties should be notified of the removal.

Care should be taken to consider environmental impact when disposing of loggers and equipment. In particular the following factors apply:

- where possible, all components should be reused or recycled, provided this does not involve excessive cost;
- all batteries must be removed and disposed of in accordance with current environmental and waste disposal legislation;
- components likely to contain mercury or other hazardous chemicals must be removed from the equipment prior to disposal and then disposed of in accordance with current environmental and waste disposal legislation. Alternatively the logger or equipment as a whole must be sent to a suitably equipped and competent facility capable of disposing in accordance with current environmental and waste disposal legislation.

Data flows and Unique Reference of ASP

An industry data hub will contain details of all equipment attached to meter and converters on site. Inclusive in the data set will be reference to the ASPCoP accredited ASP providing service. Each ASP will be recognised by a unique 3 letter identity tag.

ESTA will allocate and maintain a catalogue of these unique identifiers.

Appendix I: Technical Publications

Publication Reference	Title
IGE/GM/5	Selection, installation and use of electronic gas meter volume conversion systems.
IGEM-GM-7A	Electrical connections Draft for Approval
IGEM-GM-7B	Hazardous areas Draft for Publication
BS 7671	IEE Wiring Regulations.

BS EN 60079-17	Electrical Apparatus for explosive gas atmospheres. Inspection and maintenance of electrical installations in hazardous areas (other than Mines).
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Appendix II: Example of a Data Protection Policy

This is a statement of the data protection policy adopted by the AMR Service Provider ('the ASP'). Responsibility for the updating and dissemination of the policy rests with the ASP's Information Protection Officer. The policy is subject to regular review to reflect, for example, changes to legislation or to the structure or policies of the ASP. All staff are expected to apply the policy and to seek advice when required.

The AMR Service Provider needs to collect and use certain types of information about people, addresses and metering assets with which it deals in order to operate. These may include current, past and prospective people, addresses and metering assets, the ASP's own employees, suppliers (such as AMR Manufacturers) and others with whom the ASP conducts business. In addition, the ASP may occasionally be required by law to collect and use certain types of information to comply with the requirements of government departments. This personal information must be dealt with properly however it is collected, recorded and used – whether on paper, electronically, or other means - and there are safeguards to ensure this in the Data Protection Act 1998.

We regard the lawful and correct treatment of personal information by the AMR Service Provider as important to the achievement of our objectives and to the success of our operations, and to maintaining confidence between those with whom we deal and ourselves. We therefore need to ensure that our organisation treats personal information lawfully and correctly.

To this end, we fully endorse and adhere to the Principles of data protection, as set out in the Data Protection Act 1998.

The eight Principles require that information:

- 1) shall be processed fairly and lawfully and, in particular, shall not be processed unless specific conditions are met;
- 2) shall be obtained only for one or more specified and lawful purposes, and shall not be further processed in any manner incompatible with that purpose or those purposes;
- 3) shall be adequate, relevant and not excessive in relation to the purpose or purposes for which they are processed;
- 4) shall be accurate and, where necessary, kept up to date;
- 5) shall not be kept for longer than is necessary for the specified purpose(s);

- 6) shall be processed in accordance with the rights of data subjects under the Act;
- 7) should be subject to appropriate technical and organisational measures to prevent the unauthorised or unlawful processing of personal data, or the accidental loss, destruction, or damage to personal data;
- 8) shall not be transferred to a country or territory outside the European Economic Area unless that country or territory ensures an adequate level of protection for the rights and freedoms of data subjects in relation to the processing of personal data.

Therefore, the AMR Service Provider will, through appropriate management and strict application of criteria and controls:

- observe fully conditions regarding the fair collection and use of information;
- meet its legal obligations to specify the purposes for which information is used;
- collect and process appropriate information only to the extent that it is needed to fulfil our operational needs or to comply with any legal requirements;
- ensure the quality of information used;
- ensure that the information is held for no longer than is necessary;
- ensure that the rights of people or organisations about whom information is held can be fully exercised under the Act (i.e. the right to be informed that processing is being undertaken, to access one's information; to prevent processing in certain circumstances, and to correct, rectify, block or erase information that is regarded as wrong information);
- take appropriate technical and organisational security measures to safeguard information;
- ensure that personal information is not transferred abroad without suitable safeguards.

To assist in achieving compliance with the principles, the AMR Service Provider:

- has appointed an Information Protection Officer at a senior level with specific responsibility for data protection within the ASP;
- has documented data protection procedures.

Appendix III: Legislative References

Acronym	Full Name
ATEX 137	Explosive Atmospheres Directive (99/92/EC)
ATEX 95	Explosive Atmospheres Directive (94/9/EC)
CAD	Chemical Agents Directive (98/24/EC)
CDMR	Construction (Design and Management) Regulations 1994
COSHH	Control of Substances Hazardous to Health

	Regulations 2002
CPD	Construction Products Directive - Construction (Design and Management) Regulations 1997
DSEAR	Dangerous Substances and Explosive Atmospheres Regulations 2002
EPS	Equipment and Protective Systems for Use in Potentially Explosive Atmospheres Regulations 1996 (As Amended)
EWR	Electricity at Work Regulations 1989
GA	Gas Act 1986, and where relevant as amended by Gas Act 1995
GMR	Gas Meter Regulations (and Amendments) 1983
GS(I&U)R	Gas Safety (Installation and Use) Regulations 1998
GS(M)R	Gas Safety (Management) Regulations 1996
HSWA	Health & Safety at Work Act 1974
LOLER	Lifting Operations and Lifting Equipment Regulations 1998
MHOR	Manual Handling Operations Regulations 1992
MHSWR	Management Health & Safety at Work Regulations 1999
NWR	The Noise at Work Regulations 1989
RIDDOR	Reporting of Injuries Diseases and Dangerous Occurrences Regulations 1995

Appendix IV: Glossary of Terms

accreditation	An ASP shall gain accreditation by demonstrating that they comply with the ASPCoP
AMR (Automated Meter Reading)	AMR is a form of advanced metering that uses communications Loggers to communicate data from the gas meter to a recipient(s).
competence	The necessary skills, experience, knowledge and personal qualities necessary for an employee to carry out his or her tasks.
competent person	A person having the ability, appropriate training, knowledge and experience to supervise or carry out the “work” being undertaken in a safe and proper manner.
consumer	An end-user of gas.
Gas Act Owner (GAO)	<p>The Organisation or person responsible for providing installed metering for the measurement of gas consumption, and for maintaining the meter in good working order, as required by the Gas Act. The Gas Act Owner only relates to a meter.</p> <p>This may be Consumer, Supplier or Transporter. This will be determined at connection by agreements between these parties. The consumer may retain this via the Shipper responsibility or may delegate it to the Supplier, who in turn may delegate it to the Transporter. If requested by the Shipper, the Transporter must accept such responsibility for domestic premises.</p> <p>There may be bilateral agreements to transfer the Gas Act Ownership of a meter after installation.</p>
meter asset manager (MAM)	The role that could be taken on by a number of parties who manage a portfolio of meters on behalf of their client. They could control the meter

	<p>replacement program, arrange meter work or arrange purchase of new meters. The MAM will act as the point of contact for a meter point and can supply all known information regarding that meter point.</p> <p>There will only be one MAM per meter point. If there is not one clearly identifiable agent capable of providing all required information for a meter point then the controlling authority will be regarded as the MAM.</p> <p>The MAM in the context of the RGMA flows (as opposed to contracts or Organisational names) is the role who holds all metering information.</p>
meter asset provider (MAP)	<p>The party responsible for the ongoing provision of the meter installation at that meter point. This could be the Meter Title Owner of the Meter, or a third party with whom the MAM contracts for the provision of a meter. Where the Title Owner is not directly involved in the Gas Act Ownership of the Meter, the Meter Asset Provider needs to be identified so that the incoming MAM can make appropriate contractual arrangements for the ongoing provision of the metering equipment in situ at the Meter Point.</p>
meter owner	<p>The person owning a meter and/or a meter installation</p>
Meter Point Reference Number (MPRN)	<p>A unique identifier for the point at which a meter is, has been or will be connected to the gas network.</p>
logger	<p>Data collection logger attached to a gas meter</p>
supplier	<p>As defined in the Gas Act.</p>

Appendix V: Syllabus for Installers

Scope:

“The installation and maintenance of battery operated “plug and play” AMR devices connected to Industrial and commercial gas meters - not involving changes to the gas connections”

Objective of ensuring that installers are trained and competent able to exercise the correct professional judgement to enable them to carry installations to the required standards of quality and safety

Syllabus

Regulatory requirements

- An appreciation of the requirements of the following regulations and standards as they apply to the scope of activity:
 - HSAW Act/PPE at Work regulations - Personal Protective Equipment at Work Regulations 1992
 - Understanding of GM/7 – Connection of electrical equipment to gas meters and converters
 - BS 7671 – Wiring regulations and how they apply
 - PUWER - Provision and Use of Work Equipment Regulations 1998
 - Gas Safety (Installation & Use) Regulations
 - Electricity at Work Act
 - DSEAR and ATEX regulations relating to intrinsic safety of the equipment, the installation processes and meaning of Zones

Identification and management of hazardous situations

- Understanding of ATEX principles
- Understanding hazardous areas and meaning of zones
- Implications of installing across Zone barriers
- Identification of suitable devices and equipments
- Understanding the suitability of equipment
- Safe systems of work
- LEL/UEL (*Lower and upper explosive limits*) and GIA - (*gas in air*)
- LP Gas installations what types of equipment may be present
- Identification of unsafe installations and equipment
- Identification of meter tamper and what to do
- What to do if there is a gas leak
- What to do if a battery is damaged – spills and dangers of lithium cells
- Safe testing of existing wires (potential hazardous voltages and sparks)
- Recognising unsafe equipment and connections

Installation processes

- Identification of installed equipment – other loggers, chatter boxes, connection boxes and BMS systems
- Understanding the pulse chain and potential issues of connecting to and from other equipment.
- What is MPU work, types of MPU and when it is required
- Identification of meter types dials and pulse outputs.

- Correct interpretation of data plate information
- How to read meter dials and converters
- Understanding how meters provide a pulse – integral pulse, added pulse transmitter and use of optical devices
- Understanding what is a tamper circuit
- Correct selection of equipment and cables with relation to planned siting
- Understanding meaning of The *IP* Code (or International Protection Rating)
- Understanding basics of signal coverage (GSM and radio), positioning and use of external aerials
- Correct selection of cables and connectors to match meters and converters
- Basic PC skills and use of software
- Correct behaviour on site – how to deal with people on site and customers
- Commissioning equipment

Installation and diagnostic techniques

- Basic understanding of electrical circuits, what is polarity, wiring and how meters pulse
- Parallel and series connections and use of pulse splitters
- Correct selection & usage of test equipment
- Polarity testing between devices
- Looking for a pulse
- Continuity testing
- Understanding cable and connector specs
- Using and positioning to achieve best signal, use and positioning of external aerials
- On site handling and changing SIM cards and batteries
- Cable protection and siting and potential interaction with other services
- Practical skills – extension and joining of wires, making good connections and protection against the environment
- Cable colour and numbering protocols- current & legacy
- Siting of loggers and cable runs
- Basic earthing (i.e. do not remove add or change)
- Marking up, labelling and recording assets
- Pulse chain and responsibilities and best practice
- Managing and reinstating existing equipment
- Recording of removed assets
- Understanding issues of batteries, safe use, storage, disposal and handling

Environmental processes

- Managing of new and removed batteries – awareness of safety and handling issues
- Disposal processes – Equipment and batteries
- Consequences of incorrect disposal
- Cleaning and removal of waste material