



IGEM/GM/7A Edition 2
Communication 1803

Electrical connections for gas metering equipment



Founded 1863
Royal Charter 1929
Patron: Her Majesty the Queen



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SECTION 1 : INTRODUCTION

- 1.1 This Standard supersedes IGEM/GM/7A, Communication 1731, its scope covers electrical connections for gas metering equipment and is intended to be read in conjunction with IGEM/GM/7B Edition 2 Communication 1804, its scope covers hazardous area classification for gas metering equipment.
- 1.2 This Standard has been drafted by an Institution of Gas Engineers and Managers (IGEM) Panel, appointed by IGEM's Gas Measurement Committee, and has been approved by IGEM's Technical Co-ordinating Committee on behalf of the Council of IGEM.
- 1.3 This Standard has been developed for use by parties which make electrical connections to a gas meter (hereafter referred to as "meter") for a volume conversion device, automatic meter reading (AMR) facilities, data logging equipment, energy management systems (EMS), other pulse outputs, etc., irrespective of ownership of the meter or equipment. As such, the Standard will be of use to gas suppliers, end users, shippers, gas transporters (GTs), meter asset managers (MAMs), installation contractors, EMS installers, equipment manufacturers and consultants.
- The Standard will also be of assistance to designers and manufacturers when designing or specifying associated equipment.
- 1.4 This Standard includes additional and enhanced information, including that for meter pulse utilization (MPU). It is written such that it complements, the Supply Point Administration Agreement (SPAA), Meter Asset Manager's Code of Practice (MAMCoP), Code of Practice for Approved Meter Installers (CoP for AMI) and the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR).
- 1.5 This Standard is not retrospective. However, where work needs to be undertaken on a meter installation, it is recommended that such an installation be brought into line with this Standard.
- 1.6 The de-regulation of the metering market has led to the need for new sets of rules and Standards. This has been addressed by the SPAA MAMCoP, developed to cover whole life management of gas meter installations. The CoP for AMI which cover the installation of the meter only, will continue to apply. Businesses installing meter installations are required to be SPAA AMI. There has also been a review and harmonisation of industry standards and CoPs to reflect the needs of the changing market.

Note: SPAA-approved MAM does not have to be an AMI, but has an obligation to use an AMI to install a meter.

Notwithstanding Sub-Section 1.10, total compliance with IGEM/GM/7A is necessary for installations and modules where the meter installation has to comply with the SPAA MAMCoP, relevant scope.

- 1.7 This Standard makes use of the terms "must", "shall" and "should" when prescribing particular requirements. Notwithstanding Sub-Section 1.10:
- the term "must" identifies a requirement by law in Great Britain (GB) at the time of publication
 - the term "shall" prescribes a requirement which, it is intended, will be complied with in full and without deviation
 - the term "should" prescribes a requirement which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.

Such terms may have different meanings when used in Legislation, or Health and Safety Executive (HSE) Approved Code of Practice (ACoPs) or guidance, and reference needs to be made to such statutory legislation or official guidance for information on legal obligations.

- 1.8 The primary responsibility for compliance with legal duties rests with the employer. The fact that certain employees, for example “responsible engineers”, are allowed to exercise their professional judgement does not allow employers to abrogate their primary responsibilities. Employers must:
- have done everything to ensure, so far as it is reasonably practicable, that “responsible engineers” have the skills, training, experience and personal qualities necessary for the proper exercise of professional judgement
 - have systems and procedures in place to ensure that the exercise of professional judgement by “responsible engineers” is subject to appropriate monitoring and review
 - not require “responsible engineers” to undertake tasks which would necessitate the exercise of professional judgement that is not within their competence. There should be written procedures defining the extent to which “responsible engineers” can exercise their professional judgement. When “responsible engineers” are asked to undertake tasks which deviate from this, they should refer the matter for higher review.
- 1.9 It is now widely accepted that the majority of accidents in industry generally are in some measure attributable to human as well as technical factors in the sense that actions by people initiated or contributed to the accidents, or people might have acted in a more appropriate manner to avert them.
- It is therefore necessary to give proper consideration to the management of these human factors and the control of risk. To assist in this, it is recommended that due regard be paid to HSG48 and HSG65.
- 1.10 Notwithstanding Sub-Section 1.7, this Standard does not attempt to make the use of any method or specification obligatory against the judgement of the responsible engineer. Where new and better techniques are developed and proved, they are to be adopted without waiting for modification to this Standard. Amendments to this Standard will be issued when necessary, and their publication will be announced in the Journal of the Institution and other publications as appropriate.
- 1.11 Requests for interpretation of this Standard in relation to matters within its scope, but not precisely covered by the current text, are to be addressed in writing to Technical Services, The Institution of Gas Engineers and Managers, IGEM House, High Street, Kegworth, Derbyshire, DE74 2DA or by email to technical@igem.org.uk and will be submitted to the relevant Committee for consideration and advice, but in the context that the final responsibility is that of the engineer concerned. If any advice is given by or on behalf of IGEM, this does not relieve the responsible engineer of any of his or her obligations.
- 1.12 This Standard was published in March 2018.

SECTION 2 : SCOPE

- 2.1 This Standard covers electrical equipment and connections for gas metering equipment.

For the purposes of this Standard, “electrical equipment and connections” includes optical equipment and connections, unless otherwise stated.

- 2.2 This Standard applies to meter installations of maximum operating pressure (MOP) not exceeding 100 bar.

Additional requirements may need to be applied for installations having extensive communications systems, flow computers, etc.

- 2.3 This Standard applies to meter installations containing Natural Gas (NG) (a 2nd family gas as defined by BS EN 437) in a gaseous state.

Note: This Standard does not apply to either compressed or liquefied Natural Gas (CNG or LNG) vehicle filling station installations. Guidance on the latter is provided by IGEM/UP/20 and IGEM/UP/21 respectively or the Energy Institute (see A2.6).

Ambient temperatures are assumed to be in the range –25°C to 55°C.

- 2.4 This Standard applies to primary and secondary meter installations and associated volume conversion equipment in industrial, commercial and domestic premises, installed in accordance with IGE/GM/4 (see Note 4), IGEM/GM/5, IGEM/GM/6, IGEM/GM/8, BS 6400-1 or BS 6400-2, respectively and, where applicable, a hazardous area classification has been carried out in accordance with IGEM/GM/7B or IGEM/SR/25, as appropriate.

For an existing meter installation, this Standard applies only to new equipment being fitted for the first time or replacing existing electrical equipment i.e. it does not apply for existing equipment not being replaced.

Note 1: A meter installation in domestic premises is an installation within, or near to, a domestic dwelling into which the installation supplies gas and where it is reasonable to expect that the householder will be in the vicinity of the installation on a regular basis.

Note 2: A meter installation in industrial or commercial premises is an installation within the boundary of the industrial and commercial premises within which the gas load is located and where it is reasonable to expect that passers-by will be in the vicinity of the gas installation on a regular basis. This is to distinguish this type of installation from a remote site, for example a National Transmission System above-ground installation, where it is reasonable to expect that persons will not be present for long periods of time.

Note 3: Many of the principles of IGEM/GM/7A will apply to other gas meter installations having an unlimited installation pressure, for example at transmission boundary interfaces where gas measurement may take place. However, consideration would need to be given to the special circumstances affecting such installations, for example the remoteness of the site, high gas pressures and large gas volumes.

Note 4: For equipment installed in accordance with IGE/GM/4, an additional assessment will be required to ensure suitability.

- 2.5 This Standard considers:
- DSEAR and ATEX Directives
 - competency
 - pulse ownership
 - equipment certification and suitability
 - equipment connections
 - details of electrical connections
 - labelling
 - records and reporting.
- 2.6 Advice is provided on:
- legal requirements
 - authorisation procedures
 - electrical low frequency (LF) and high frequency (HF) outputs
 - design of electronic interface equipment
 - ensuring integrity of installation, operation and maintenance of a pulse chain
 - procedures for telephone connections
 - equipment location and installation
 - equipment connection, protection and isolation
 - earthing
 - inspection and maintenance.
- 2.7 This Standard applies to the connection of any electrical equipment to a gas meter, including:
- a volume conversion device
 - AMR facilities
 - add-on pulse modules
 - a data logger
 - an EMS
 - radio transmitting devices
 - a tamper circuit.
- 2.8 This Standard does not address any requirements relating to “gas work” under the Gas Safety (Installation and Use) Regulations (GS(I&U)R).
- 2.9 All pressures quoted are gauge pressures unless otherwise stated.
- 2.10 Italicised text is informative and does not represent formal requirements.
- 2.11 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms “must”, “shall” or “should”.