

## PGC5000 Series

# Process Gas Chromatographs



### Factory notice

Safety reminder

15<sup>th</sup> November 2017

On October 1, 2017, the Chemicals, Explosives and Microbiological Hazards Division of Health and Safety Executive in the United Kingdom issued Safety Alert Bulletin Number CEMHD 1 2017.

A safety issue was discovered with another manufacturer's Gas Chromatograph that uses the "PX" protection concept in the upper Electronics Enclosure. This design is based on a purge flow of air being used to dilute any flammable gasses present below the flammable limits. This issue was unfortunately discovered after an instrument technician was injured as a result of an explosion.

The general concern presented in Safety Alert Bulletin Number CEMHD 1 2017 is the possibility that a similar set of circumstances may be replicated with GC equipment supplied by other manufacturers. In line with the duties required by UK health and safety law and in particular the Dangerous Substances and Explosive Atmospheres Regulations (2002) Regulation 6 and the Provision and Use of Work Equipment Regulations (1998) Regulation 12, HSE is stating that Users of GC's produced by other manufacturers should discuss the suitability of their current operating arrangements for other manufacturers' GC's.

The specific intent of this communication is to formally respond to users of ABB's GC equipment manufactured in Lewisburg, WV regarding the suitability of said equipment relative to the specific issue that is the subject of the HSE Safety Alert Bulletin Number CEMHD 1 2017. The document attached to this communication represents ABB's relevant response to its end users.

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## FACTORY NOTICE – SAFETY REMINDER

### Process Gas Chromatograph Analyzer, Series PGC5000, PGC2000 and GC 3100

### SAFETY FEATURES WHEN CONFIGURED WITH TYPE Ex “pxb” ENCLOSURE PURGE AND PRESSURIZATION PROTECTION

This factory notice is a reminder of the safety features when operating the ABB manufactured gas chromatograph analyzer configured with Level of Protection “p”, “px”, “pxb” or X-purge. The design of the analyzer incorporates the following specific features:

- Prevents access to inside the pressurized protected enclosures without the use of a tool;
- Prevents access to inside the pressurized protected enclosures while the analyzer is energized. The Purge Control Unit disconnects the electrical supply automatically when the enclosure door is opened;
- Prevents access to inside the flameproof protected enclosure of the Purge Control Unit by means of an internal power interlock device.
  - If the cover is removed from the Purge Control Unit’s flameproof enclosure, electrical supply will automatically be disconnected to the analyzer,
  - If the Purge Control Unit’s safety devices are defeated or bypassed and then the cover is replaced on the flameproof enclosure, electrical supply will not be restored to the analyzer until the specified purging sequence is satisfied;
- Prevents the electrical supply from being restored after a pressurized protected enclosure is opened then closed again, until the specified purging sequence is satisfied. The automated purging sequence dilutes a potential build-up of flammable gas to a safe level before electrical supply is restored to the analyzer;
- Prevents an ignition risk during maintenance of the analyzer by de-energizing the internal components when the unprotected enclosure is opened. Since the standard configuration of the Purge Control Unit does not offer a bypass switch, the analyzer cannot be left in a ‘hold’ status. Because the analyzer does not provide switching from “operation” to a “maintenance” mode, the automated purging sequence of the Purge Control Unit will continue to ensure safe operation of the analyzer.

Additional safety measures are designed in to the analyzer, such as:

- In normal operation the analyzer maintains a continuous flow of purge air, and
- Internal electrical components are either non-sparking, energy limited or located away from any potential source of release of flammable gas.

The analyzer’s safety devices for the Ex “pxb” protection are intrinsically safe, and are an integral part of IECEx certified Purge Control Unit, CSA 17.0009X, Ex db [ib] IIB+H2 T4 Gb.



In accordance with the product conformity standard IEC 60079-2:2014, ***“the purpose for which the automatic safety devices are used (that is, to disconnect power or to sound an alarm or otherwise ensure safety of the installation) is typically the responsibility of the user”.***

Should the analyzer’s automatic safety devices of the Purge Control Unit be defeated or bypassed during operation, such as for maintenance purposes, the user of the analyzer shall adhere to the requirements of standard IEC 60079-17:2013, for Electrical Installations, Inspection and Maintenance. Pressurized enclosures shall be inspected in accordance with Table 3 of IEC 60079-2 for safety devices based upon Level of Protection, with standard IEC 60079-14:2013 for Electrical Installations Design, Selection and Erection and Section, and specifically for action to be taken on failure of pressurization.

If the pressurization control system is fitted with an override device or maintenance switch to allow the pressurized enclosure to remain energized in the absence of pressurization, e.g. when the enclosure door has been opened, the continuous flow of the protective gas (air) will continue during the override.

Override devices shall be used in a hazardous area only if the specific location has been assessed to ensure that potentially flammable gas or vapor is absent during the period of use (“gas-free” situation). The enclosure should be de-energized at once if flammable gases are detected while operating under these conditions and re-purged before it is put back into service.

Specific purge and pressurization instructions are listed on the analyzer nameplate, including the ***“WARNING”*** to: ***remove power below 0.5 mbar, 0.2 inch of water column. Enclosure shall not be opened unless the area is known to be non-hazardous, or unless all devices within the enclosure have been de-energized. Power must not be restored after enclosure has been opened until enclosure has been purged for 18.2 minutes at the specified flow rate. The safety of this equipment relies on the provision of proper purging and pressurizing when used in hazardous locations. It must not be put into use without special permission when used in hazardous locations from the inspection authority having jurisdiction.***

Failure to follow the purge and pressurization instructions listed on the analyzer nameplate constitutes product misuse.

The series PGC5000 analyzer is certified for use in an explosive atmosphere, LCIE 09ATEX3006X for II2G, LCIE 09ATEX1017X for II3G, IECEx LCI09.0010X for Gb and Gc, and for Hazardous Locations CSA 2117477 and CSA 2117478 for Class I, Groups B,C,D, Divisions 1 and 2.

The manufacturer hereby confirms that the series PGC5000 analyzer with Type “pxb” protection, including the series PGC2000 and GC3100 analyzer, when operated as intended, meets or exceeds the essential health and safety requirements set forth in Directive 2014/34/EU (ATEX), Article 4 and specifically Annex II relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, and is constructed in accordance with the principles of good engineering practices with regard to safe operation.

A handwritten signature in blue ink, reading 'F. Scott Kiddle', is positioned above the printed name.

F. Scott Kiddle  
Compliance Officer  
ABB Inc., Lewisburg