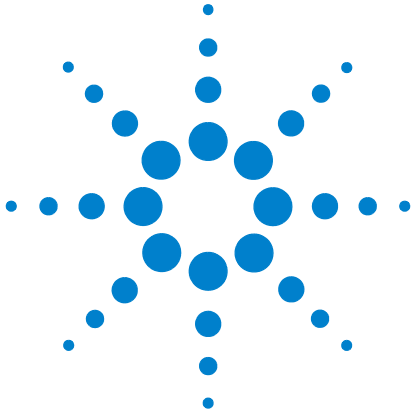


Agilent E5083MC Cryogen Monitor/ Pressure Regulator Compressor Interface

Reference Guide

Agilent Technologies

Notices

Manual Part Number

9100383100

Edition

Revision A, April 2012

Printed in USA

Agilent Technologies, Inc.
5301 Stevens Creek Boulevard
Santa Clara, CA 95051 USA

Warranty

The material contained in this document is provided "as is," and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this manual and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.

Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

Restricted Rights Legend

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as "Commercial computer software" as defined in DFAR 252.227-7014 (June 1995), or as a "commercial item" as defined in FAR 2.101(a) or as "Restricted computer software" as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies' standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

1
Description, Commands and Errors

Description

This manual describes the E5083MC, which is a variant of the E5080 Series Cryogen Monitor. The E5083MC is an extended version of the E5083 Cryogen Monitor, which contains an interface to a Cryomech CP2800 Series Compressor or a Sumitomo F70 compressor.

The Cryomech unit is connected from the 37W D output labeled “COMPRESSOR” to 15W D output on the Cryomech labeled “SYSTEM I/O” using a C0819XXX cable. A Sumitomo unit is connected from the 37W D output labeled “COMPRESSOR” to 25W D output on the Sumitomo, using a C0797XXX cable. Use the lead marked "PATIENT" and leave the other lead marked "SERVICE" unused.

Additional connections to the 6 pin DIN output labeled “AUX INPUT “ and to the 9W D output labeled “PRESSURE” on the E5083MC back panel are made when used with the Compressor Water Flow Gauge cable Agilent part number C0686XXX.

On systems where there are no flow gauges fitted then the dongle, part number C0734 must be fitted to the 6 pin DIN output labeled “AUX INPUT “ to eliminate any errors associated with water flow.

The additional interface in this unit allows it to monitor the operation of the compressor and its water flow. The unit incorporates the functionality of an E5083 unit, but includes the following the additional capabilities:

- to control the compressor operation as the cryostat pressure varies
- to respond to compressor errors and to control the operation of the compressor in the event of a water flow error

E5083MC Commands

The E5083MC has two additional pressure set points, which are applicable to control of the compressor.

The following tables show the additional commands for customer use that can be used when a computer is connected to the E5083MC.

Compressor Request

Command	Function	Reply
XU		Text String of parameters
~	Compressor specific HELP	Compressor specific help list

Compressor Commands

Command	Function
HVnnnn	Set Very High Pressure (VHP) trip to nnnn mB
LVnnnn	Set Very Low Pressure (VLP) trip to nnnn mB

Status and Error Detection

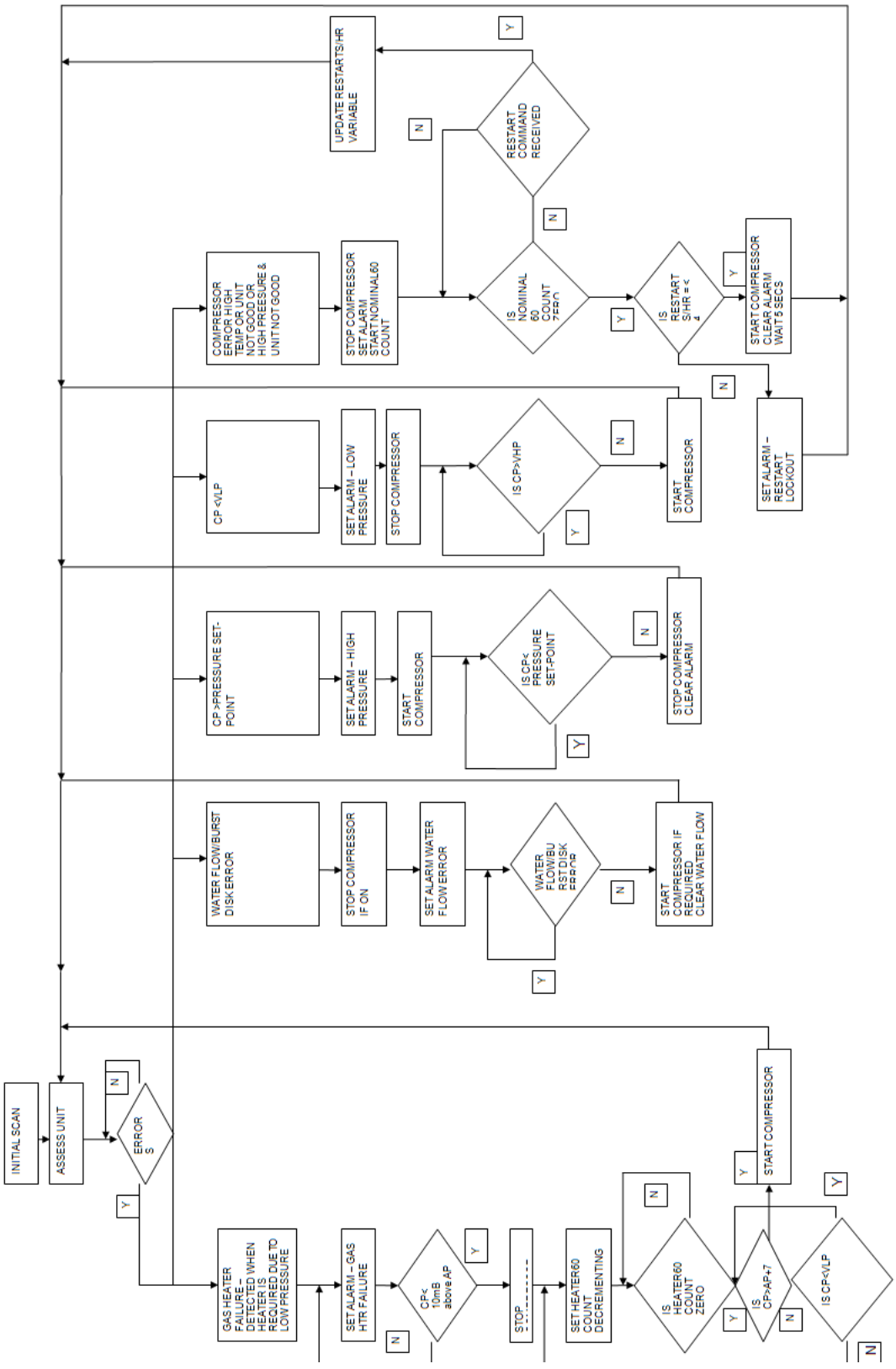
In addition two status bytes are added to the reply from the W command and detail the status of compressor itself and the E5083MC status in controlling the compressor.

The compressor operation may be affected by attempting to restart the compressor too many times when there is an error. The E5083MC unit monitors the number of attempted restarts when a compressor error is present and will lock out the user when this exceeds 5 in a one hour period. Further restarts will only be possible after a delay of 65 minutes.

NOTE If the E5083MC is switched on before connecting the communication cable to the compressors, the compressor will switch off until 65 minutes have elapsed. Refer to the flowchart regarding operation of the E5083MC when it receives a compressor error.

Error Handling Flow Diagram

The flowchart below shows the operation in the event of an error being detected by the E5083MC.


INITIAL SCAN
ASSESS UNIT
ERROR S
N
Y
GAS HEATER FAILURE DETECTED WHEN HEATER IS REQUIRED DUE TO LOW PRESSURE
SET ALARM – GAS HTR FAILURE
CP< 10mB above AP
Y
N
STOP
SET HEATER60 COUNT DECREMENTING
IS HEATER60 COUNT ZERO
N
Y
IS CP>AP+7
N
Y
START COMPRESSOR
IS CP<VLP
Y
N
WATER FLOW/BURST DISK ERROR
STOP COMPRESSOR IF ON
SET ALARM WATER FLOW ERROR
WATER FLOW/BURST DISK ERROR
N
Y
START COMPRESSOR IF REQUIRED CLEAR WATER FLOW
CP >PRESSURE SET-POINT
SET ALARM – HIGH PRESSURE
START COMPRESSOR
IS CP< PRESSURE SET-POINT
N
Y
STOP COMPRESSOR CLEAR ALARM
CP <VLP
SET ALARM – LOW PRESSURE
STOP COMPRESSOR
IS CP>VHP
N
Y
START COMPRESSOR
SET ALARM – RESTART LOCKOUT
COMPRESSOR ERROR – HIGH TEMP OR UNIT NOT GOOD OR HIGH PREESURE & UNIT NOT GOOD
STOP COMPRESSOR SET ALARM START NOMINAL60 COUNT
IS NOMINAL 60 COUNT ?ZERO
Y
N
IS RESTART S/HR =< 4
Y
N
START COMPRESSOR CLEAR ALARM WAIT 5 SECS
RESTART COMMAND RECEIVED
Y
N
UPDATE RESTARTS/HR VARIABLE

Agilent Technologies

Printed in USA, Revision A, April 2012

9100383100