MICROCOMPUTER CONTROL

Vision2020i a flexible and advance programmable electronic microcontroller designed specifically for the applications and precise control of Dunham-Bush Rotary Screw compressor chillers.

The controller board is provided with a set of terminals that connected to various devices such as temperature sensors, pressure and current transducers, solenoid valves, compressors and fans contactors, control relays and etc. Three sizes of controller boards are provided to handle different number of input and output requirements: DB2-S small board, DB2-M medium board and DB2-L large board.

The unit algorithm program and operating parameters are stored in FLASH-MEMORY that does not require a back-up battery. The program can be loaded through PC or programming key.

Vision2020i controller is equipped with a user friendly terminal with a graphic display and dedicated keys that provides easy access to the unit operating conditions, control set points and alarm history.

Each unit's controller can be programmed and connected to the local DBLAN network that allows multiple units sequencing control without additional hardware. The DBLAN is local area network made up of several chillers' controller.

Display and User Terminal

Vision2020i controller is design to work with a user friendly back-lit 132 by 64 pixels DBG1 Graphic Display panel connected with controller through telephone cable. The terminal allows carrying out all program operations. The user terminal allows displaying the unit working conditions, compressor run times, alarm history and modifying the parameters. The display also has an automatically self-test of the microprocessor on system start-up. Multiple messages will be displayed by automatically scrolling from each message to the next. All of these messages are spelled out in English language on the display terminal.

There are 15 dedicated buttons enable user to access information, base on the security level of the password. For more detail operation of the DBG1 Display Terminal, please refer to the Unit Operation Manual.

Easily accessible measurements include:

❀ Leaving chilled water temperature
❀ Leaving chiller water temperature derivative
❀ Evaporator Pressure
❀ Condenser Pressure
❀ Compressor amp draw of each compressor
❀ Compressor elapsed run time of each compressor
❀ Compressor starts status
❀ Oil level sensor status
❀ Water temperature reset value
❀ Water flow switch status
❀ External start/stop command status

Optional entering chilled water temperature, leaving and entering condenser water temperature are available. With this option the operator can quickly and accurately read all significant water temperatures and eliminate the need for often-inaccurate thermometers.

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Capacity Control

Leaving chilled water temperature control is accomplished by entering the water temperature setpoint and placing the microcomputer in automatic control. The unit will monitor all control functions and move the slide valve to the required operating position. The compressor ramp (loading) cycle is programmable and may be set for specific building requirements. Remote adjustment of the leaving chilled water setpoint is accomplished through either direct connection of other Dunham-Bush control packages to the microcomputer through either the RS485 long distance differential communications port, via terminal or modem connected to the RS232 communication port, or from an external Building Automation System supplying a simple 4 to 20mA signal. Remote reset of compressor current limit may be accomplished in a similar fashion.

System Control

The unit may be started or stopped manually, or through the use of an external signal from a Building Automation System. In addition, the microcomputer may be programmed with seven-day operating cycle or other Dunham-Bush control packages may start and stop the system through inter-connecting wiring.

System Protection

The following system protection controls will automatically act to insure system reliability:
* Low suction pressure
* High discharge pressure
* Freeze protection
* Low differential pressure
* Low oil level
* Compressor run error
* Power loss
* Chilled water flow loss
* Sensor error
* Compressor over current
* Compressor Anti-recycle

The microcomputer will retain the latest up to 99 alarm conditions complete with time of failure together data stamping on critical sensor readings in an alarm history. This tool will aid service technicians in troubleshooting tasks enabling downtime and nuisance trip-outs to be minimized.

Remote Monitoring

The microcomputer is complete with an optional RS485 communications card and NETVISOR software necessary for remote monitoring and controlled from a PC terminal and optional phone modem.

With various optional add-on cards the Vision2020i controller can also be interfaced directly to the BMS with the standard communication protocols using MODBUS, LONWORKS, BACNET MSTP as well as over IP.

This sophisticated feature makes servicing easier and more convenient to the system. The microcomputer as standard is additionally equipped with history files which may be used to take logs which may be retrieved via the phone modem or internet connection periodically. Now owners of multiple buildings have a simple and inexpensive method of investigating potential problems quickly and in a highly cost effective manner. Dunham-Bush has various open protocols on its microcomputer to allow direct interface with Building Management Systems.