PROTHERM 470

PROCESS CONTROLLER
FOR HEAT TREATMENT

Replacement for PROTHERM 100, 200, 300, 300DIFF, Nicarm 300, Carbocon OC2, OC3, OC5 and Carbonit

www.group-upc.com
PROTHERM 470 PROCESS CONTROLLER

FEATURES & CHARACTERISTICS
The PROTHERM 470 is designed to monitor, control, record and archive heat treatment processes running in a furnace or simultaneously in multiple chambers. They are configurable for various types of batch and continuous furnaces. Installations are done on new or refurbished furnaces and are used for updating existing systems.

MAIN FEATURES
- Visual display of the connected furnace, chambers, different configured components (e.g.: furnace door, recirculation turbines, etc.) and the loads
- Can hold up to 32 PID control-loops to regulate configured process parameters such as temperature, furnace pressure as well as atmosphere parameters (e.g.: carbon potential, nitriding potential and oxygen potential)
- Load oriented treatments: real-time monitoring of jobs at all stages of the process and all chambers of the furnace
- All process parameters can be configured with alarm limits
- Notification and processing of alarms
- An online diffusion calculation provides the capability to control the process using the required target values (e.g.: case depth, surface carbon content)
- Process variables can be viewed and recorded with chart recorders
- Log files in PDF and ASCII-CSV format can be downloaded to a remote computer for archiving
- Up to 99 treatments and templates can be created and modified

OPERATING CHARACTERISTICS
- Control knob or Touch-enabled screen enables user to select input fields and enter data
- Function keys are used for accessing the most important functions
- Users access to different functions is password protected
- A PC keyboard can be connected through a PS/2 port

INTEGRATED WEB SERVER
- A remote computer can be connected to the device through a standard web browser
- The treatment logs in PDF format and in ASCII-CSV format are kept for 30 days. They can be downloaded and then further processed with any appropriate PC software (e.g. Microsoft® Excel)
- A powerful Java based configuration tool can be downloaded and installed on a local PC for configuring all the device parameters

INTEGRATED WEB SERVER
- Mathematical model for calculating atmospheric parameters from gas inputs and sensor values
- Real-time carbon and/or nitrogen diffusion calculation
- Hardness profile calculation based on chemical composition, carbon or nitrogen content in the material, and quenching parameters

BUILT-IN FUNCTIONS
- The control loops, furnace graphics, process variables and more can be configured with a user-friendly proprietary configuration software
- The set-up of the PID parameters and other control functions are accessed via the configuration key
FURNACE & SETTINGS SCREEN

- Graphic display of the furnace chambers and loads
- Display of selected process variables
- Schematic view of the process gases system
- Input screen for process parameters

TREATMENT MANAGEMENT

- Treatments can be created and modified
- Jobs can be started and stopped
- Templates can be created and modified

HISTOGRAMS

- Paperless Flexible Chart Recorder
- 8 chart recorders (screens) displaying up to 8 process variables (64 analogue values)
- Zoom functions
- Slide ruler displays individual settings and values

SPECIAL PROCESS DIAGRAMS

- Diagrams that display the actual state of a load during a process
- Carbon content and hardness profiles
- Nitrogen content and hardness profiles
- Fe-C state diagram
- Fe-N Lehrer diagram
- Fe-N-C NICARM diagram
- Fe-O state diagram

CONFIGURATION

- Special menu for the configuration of the integrated controllers
- PID set-up
- Adjustment and setting of control parameters
- Real-time graph for displaying the control parameters and checking the settings

ALARM MENU

- Comprehensive alarm processing
- Recording of all alarms
**Protherm 470 Backplate**

### ALSO AVAILABLE

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<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>Analyzers</td>
<td>Hydrogen, oxygen and ammonia analyzers available either as portable of fixed-mount</td>
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<tr>
<td>Atmosphere Sensors</td>
<td>Oxygen, hydrogen and insitu carbon diffusion sensors used in various processes</td>
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<tr>
<td>Measuring Devices</td>
<td>Carbo-Test (direct measuring of carbon in atmosphere) &amp; C-Detect (multi-parameter carbon analysis of shims)</td>
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<tr>
<td>Protherm 10</td>
<td>Cost-effective temperature and industrial controller with expanded functionality, including a programmer and a datalogger</td>
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<td>AE25</td>
<td>1/4 DIN multi-loop universal process controller pre-configured for application</td>
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<td>AE06L</td>
<td>1/16 DIN controller. Over temperature limit protection</td>
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<tr>
<td>Protherm 455</td>
<td>Multi-loop process controller. Direct drop-in replacement for Marathon’s CarbPro, DualPro, MultiPro, and Carb PC</td>
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<tr>
<td>Protherm 470</td>
<td>Universal digital control system for regulating and controlling heat treatment processes</td>
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<tr>
<td>Protherm 500/600/700</td>
<td>Universal programmable controllers designed to monitor, control and record heat treatment processes running in various types of furnaces</td>
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<tr>
<td>Protherm 9800</td>
<td>Integrated Production Management Software Package for optimizing the performance and efficiency of a heat treatment plant operating a variety of furnaces and for automatic handling of machinery</td>
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<tr>
<td>HT-TOOLS PRO</td>
<td>Simulation software for carburizing, carbonitriding, nitriding &amp; nitrocarburizing processes</td>
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