



HTI Cybernetics, Inc.

CONTROLS DESIGN SPECIFICATIONS

The following HTI requirements will be followed in its entirety unless written authorization from an HTI representative is acquired. The design source is responsible for securing and adhering to all customer's specifications, and to address any specifications that conflict with requirements listed below.

SCHEDULING

Weekly progress reports will be required from the design source. These reports may be formatted to the design source's choice, but must be approved prior to initiating.

The design source will be responsible for achieving the delivery dates established and agreed upon. Scheduling is based upon a standard 55 hour work week. Any additional overtime labor costs required to achieve the established delivery dates, will not constitute a cost to HTI. Exceptions to this will include product or process revisions and/or additions to the design as requested by an HTI representative.

PROJECT MANAGEMENT

A single point of contact shall be designated to the design phase of the project. All data from either the customer or an HTI representative, will be channeled through this one individual.

PRODUCT DOCUMENTATION

The design source is expected to keep and maintain a filing system of all product drawings, CAD data and related documents. All customer correspondence and drawings are to be date stamped when received at the design source or logged into the computer with a date ledger. Obsolete drawings will be marked as such near the title block and saved for establishing a historical file. All obsolete product drawings, CAD files, and related documents will be filed and saved until final buy-off of the equipment at the customer's facility or when disposal is authorized by an HTI representative.

DESIGN RELEASES

Designs will be released to the Controls Manager after completion of the detailing and checking process. Final "As Built" designs with CAD files will be sent to HTI just prior to shipment of the equipment to the customer. HTI reserves the right to withhold 10% of payment from the design source to ensure delivery of "AS BUILT" drawings.

DESIGN DEVELOPMENT

Upon award of a new project, the design source will be given an RWD and sequence sheets to begin the controls design process. HTI will review progress on a weekly basis or as deemed necessary by the HTI Project Manager or Controls Manager.

Designs must be developed with an emphasis on safety and cost in manufacturing. Designs must be robust but with consideration for ease of wiring, piping and assembly.

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All commercial controls components must be sized in accordance with NEC, NEPA, RIA and customer specs.

DESIGN CHANGES AND COSTS

All design changes that incur a cost must be approved by an HTI Project Manager or Controls Manager prior to initiating. Approval is defined as a written estimate and description with a signature of the HTI representative. Design content is based upon the original HTI proposal submitted to the design source for quoting. This will be used as the baseline for equipment content. Only equipment not covered in this base line, or product/process related revisions will be considered. HTI will not be responsible for the design errors or poor design practices. Design approval by a HTI representative signifies a working concept and does not reflect design integrity and functionality. Design approval and sign-off does not relieve the design source for the responsibility in developing a functional design that meets or exceeds the customer's requirements.

Design improvements that result in reduced costs to HTI in the assembly or build phase of the equipment, are strongly encouraged. The design source is expected to present any cost savings ideas that enhance the system without subtracting from the quality or functionality of the machine. However, any additional design costs must be approved before initiating.

DESIGN LOGS

The design source will be required to create and maintain fixture and/or unit design logs. These logs will include critical information related to product changes, customer input and scheduled meetings. Copies of the logs will be made available to HTI representatives upon request.

DESIGN APPROVALS

Unless dictated by the customer, all designs will require approval at (2) different levels of the development process. These include:

Hardware approval -Must be approved by the customer and the HTI Controls Manager.

Software approval -Same as above.

HTI will possess the liberty to make any changes at no cost to designs that have not followed the approval process.

DESIGN CHECKING

All designs are expected to be thoroughly checked prior to final release and shipment for build.. Check prints must be saved and filed until final buy off of the equipment at the customer's facility. Design errors found during the build process will be communicated to the design source for updating of the drawings, at no cost to HTI.

HTI understands that no designs are error free and expect some minor problems during the manufacturing and build of the components. However, HTI will not accept gross and negligent design errors that result in excessive cost for repair. Costly repairs may be taken into account and discussed during final change negotiations with the design source.

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LAYOUT AND B.O.M. SHEET FORMAT

All designs will be on HTI title block formatted sheet unless the customer use's another format is dictated by the customer. A CAD file for the HTI standard layout sheet with title block will be provided. If a customer's standard layout format is required, the HTI's company name and job number will be listed along the lower RH border of the sheets. All designs unless otherwise agreed upon by the HTI representative will be formatted to an 11" x 17" sheet with 8 x 11 " B.O.M.'s. HTI will provide their standard B.D.M. format upon request.

GENERAL SPECS

Controls design deliverables from the design source to HTI are to include but are not limited to, PLC program, panel view screen, hardware package and bill of materials.

All switches and sensors are to be back checked in the PLC program for safety.

All cables that go from a station to the main PLC panel are to terminate in a box @ the station and be plugged into a receptacle @ the control panel unless directed otherwise by HTI's customer.

All power supply's are to have a 25% spare capacity.

Under no circumstance will proprietary hardware or software be acceptable unless approved by HTI and its customer.

All PLC outputs shall energize 1 device only, no paralleling of devices is allowed.

All multi conductor cables shall be configured so that when plugs are removed from a receptacle, no hot points are left exposed.

PLC input devices will be connected to one input point only. Inputs are not to be connected in series or parallel prior to driving the input module.