HONEYWELL EDP

SUBJECT:

Operating Instructions for the Type 1201
Central Processor Control Panel

SPECIAL INSTRUCTIONS:

This hardware bulletin, which completely
supersedes the bulletin of the same name
dated September 30, 1965, supplements
Section III of the Honeywell Series 200
Equipment Operators' Manual, Order No. 040.

CONTROL PANEL FOR THE TYPE 1201 CENTRAL PROCESSOR

The basic characteristics of the Series 200 operator's control panel are described in the Honeywell Series 200 Equipment Operators' Manual (Order No. 040), Section III. This bulletin, with references to the manual, defines specifically the Type 1201 Central Processor Control Panel.

GENERAL DESCRIPTION

The Type 1201 Central Processor Control Panel indicators and controls enable the operator to enter data manually into control and main memories. The panel also includes indicators that monitor the control and main memory contents. Four "sense" switches permit the operator to change program flow at will.

PHYSICAL DESCRIPTION

The control panel, which is mounted atop the central processor power cabinet, is a rectangular box containing push buttons, indicators, and display lights. Figure 1, page 6, illustrates the Type 1201 Central Processor Control Panel. It differs in several respects from the Model 200 control panel illustrated on page 3-1 of the Equipment Operators' Manual. Its ADDRESS push-button indicators are increased to six octal groups, rather than five; its CONTROL push-button indicators are increased to two octal groups. Also, the Type 1201 ADDRESS MODE push-button indicators enable operation in the four-character address mode, in addition to the two-character and three-character address modes illustrated in the manual. An INTERRUPT push-button indicator is introduced, and the former CENTRAL CLEAR button is designated — on the Type 1201 Central Processor Control Panel — as SYSTEM CLEAR. Finally, four additional control panel indicators are present in the lower right corner of the 1201 control panel: the EXTERNAL, INTERNAL, PROGRAM, and PROTECT indicators.

OPERATOR CONTROLS

The push-button indicator controls illustrated in Figure 1 are described below. Control panel indicators without push button capabilities (shown in Figure 1 by broken-line blocks) are listed in Table I, page 2.

ADDRESS Push-Button Indicators

Basically, the description of the ADDRESS push-button indicators in the Equipment Operators' Manual, Section III, pages 3-1 and 3-2 applies to these indicators on the Type 1201

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Table I. Control Panel Indicators

INDICATOR	DESCRIPTION
EXTERNAL	The EXTERNAL indicator illuminates whenever the central processor is in the external interrupt (ei) mode. The ei mode is manually entered by depressing the INTERRUPT button with the central processor in the run mode or by depressing the INTERRUPT and INSTRUCT buttons with the CP in the STOP mode. The ei mode is automatically entered by peripheral interrupts or by a Monitor Call instruction.
PARITY	The PARITY indicator illuminates if a parity check is stored or if the addressed location does not exist. See page 7 for applicable recovery procedures.
FAN	The FAN indicator illuminates and system dc voltages are removed if the central processor stops because of an air-flow check; the RESET DC OFF button also illuminates and the DC ON button is extinguished. See page 6 for applicable recovery procedures.
CB	The CB indicator illuminates and system dc voltages are removed if central processor operation stops because of a circuit breaker actuation; the RESET DC OFF button illuminates and the DC ON button is extinguished. See page 7 for applicable recovery procedures.
VOLTAGE	The VOLTAGE indicator illuminates and system dc voltages are removed if the central processor stops because of an overvoltage or undervoltage in a dc power supply; the RESET DC OFF indicator illuminates and the DC ON button is extinguished. See page 7 for applicable recovery procedures.
INTERNAL	The INTERNAL indicator operates in conjunction with Storage Protection (Feature 1114). It is illuminated whenever the central processor is in the internal interrupt mode as a result of a storage protection violation (see Honeywell Series 200 Programmers' Reference Manual (Models 200/1200/2200), Order No. 139). During processing, the internal interrupt mode is exited by the execution of a Resume Normal Mode (RNM) instruction. In the STOP mode, the internal interrupt mode may be exited by depression of the INITIALIZE button; the INTERNAL indicator, however, remains illuminated as long as the INITIALIZE button is held depressed.
PROGRAM	The PROGRAM indicator is illuminated whenever a program check occurs as a result of the use of an illegal or non-installed optional op code. Refer to page 7 for applicable recovery procedures. However, if Storage Protection (Feature 1114) is in effect, the PROGRAM indicator is not illuminated when a program check occurs; instead, the internal interrupt (ii) mode is entered, and the disposition of the program check condition is thus under the control of the internal interrupt routine.
PROTECT	The PROTECT indicator is illuminated whenever storage protection is in effect. If storage protection is not in effect, the PROTECT indicator is illuminated only when the INITIALIZE button is depressed.

Central Processor Control Panel. However, the change from five to six octal groups in the 1201 control panel increases the capability of the system. The low-order 17 bits permit addressing 131,072 main memory locations (the memory capacity of the machine). The high-order bit (bit 18) in the 1201, however, is active only when the Scientific Unit (Feature 1100) is installed in the system, in which case, all control memory locations (and hence the ADDRESS indicators) are 18 bits wide, regardless of main memory size.

CONTENTS Push-Button Indicators

The CONTENTS push-button indicators display the contents of the memory local register (MLR), comprising one character in memory as a binary pattern of lights. These indicators are set and reset in the same manner as the ADDRESS indicators (page 3-2, Equipment Operators' Manual), except that the MLR is reset by depression of either the INITIALIZE button or the CONTENTS CLEAR button. When the system is in the stop mode, the indicators are not illuminated unless they are changed manually.

The CONTENTS DISPLAY and CONTENTS ENTER push buttons are described on page 3-3 of the Equipment Operators' Manual. It should be noted, however, that depressing the CONTENTS DISPLAY button will not cause the internal interrupt demand to be set in a processor that is equipped with Storage Protection (Feature 1114). Similarly, depressing the CONTENTS ENTER button will not alter the state (set or reset) of the internal interrupt demand.

CONTROL Push-Button Indicators

The binary state of the six CONTROL push-button indicators display the octal address of a control memory register. The display does not change while the program is running unless the buttons are changed manually. The state of the buttons can be altered at any time; alternate depressions cause a button to be illuminated and extinguished.

The CONTROL buttons play no role while a program is running; they are used only by the control panel itself, in conjunction with the following push buttons:

DISPLAY+1, DISPLAY-1, DISPLAY,and ENTER

The functioning of these four push buttons is described on pages 3-4 and 3-5 of the Equipment Operators' Manual.

> NOTE: If incorrect parity results under Condition 2 (page 3-4 of the manual) when CONTROL DISPLAY+1 has been acuated, or if incorrect parity results when CONTROL ENTER has been actuated, the PARITY indicator illuminates. The PARITY indicator is also illuminated if the addressed location does not exist. The indicator may be reset prior to performing further manual operations; however, all manual operations, except Bootstrap, Instruct, and Run can be performed while the PARITY indicator is illuminated.

STOP Push-Button Indicator

The general functioning of the STOP button is described on page 3-5 of the Equipment Operators' Manual. In addition to those conditions described in the manual, the 1201 honors no external or internal interrupts when the system is in the STOP mode. An external or internal interrupt demand may be set while the system is in the STOP mode, but the corresponding EXTERNAL or INTERNAL interrupt indicator on the control panel is not illuminated and the

appropriate mode is not entered until either the RUN button or the INSTRUCT button is depressed.

As a normal STOP mode is entered (i. e. , a stop condition free of error checks), the instruction under extraction or execution is fully executed and is the last one performed, regardless of existing external or internal interrupt conditions.

In addition to the five ways described in the manual, a program check condition (detection of an illegal op code) in the 1201 also causes the STOP mode to be entered.

SYSTEM CLEAR Push Button

The SYSTEM CLEAR push button on the Type 1201 Control Panel is comparable to the CENTRAL CLEAR button described on pages 3-5 and 3-6 of the Equipment Operators' Manual, except that the list of conditions resulting from a CENTRAL CLEAR button depression should be expanded to include the extinguishing of the PROGRAM indicator on the 1201 control panel when the SYSTEM CLEAR button is depressed following the detection of an illegal op code.

INITIALIZE Push Button

The functioning of INITIALIZE is described on page 3-6 of the Equipment Operators' Manual. It should be noted that all central processor auxiliary storage functions (which may or may not be represented by control panel indicators) are cleared when the INITIALIZE button is depressed. Any control panel indicators corresponding to auxiliary storage functions, e. g. , PROGRAM, PARITY, EXTERNAL, INTERNAL, etc. , are thus extinguished when the INITIALIZE button is depressed.

RUN Push-Button Indicator

The functioning of the RUN button is also described in the manual, page 3-7. The RUN button is not effective if a parity check or a program check (detection of illegal op code) is stored. The operator must clear a stored-error condition before the RUN mode can be entered.

INTERRUPT Push-Button Indicator

Depression of the INTERRUPT button sets the control panel interrupt demand, and the central processor enters the external interrupt mode when certain conditions in the central processor are satisfied. The interrupt demand can be reset upon execution of a programmed Store Variant and Indicators (SVI) instruction or by depression of the INITIALIZE button.

The INTERRUPT push button is always effective, even when the STOP button is illuminated. Once actuated, the INTERRUPT button remains illuminated as long as the control panel interrupt demand is set.

"2", "3", and "4" ADDRESS MODE Push-Button Indicators

A description of the ADDRESS MODE push button is given on page 3-9 of the Equipment Operators' Manual. Figure 1 of this bulletin shows how the location of the buttons is changed to accommodate the added ADDRESS MODE "4" push button.

INSTRUCT Push Button

Operational effects of actuating INSTRUCT are given on page 3-7 of the manual. For the INSTRUCT button to be effective, the system must be in the STOP mode, and, in addition, a parity or program check condition must not exist.

If an external or internal interrupt demand is stored and the central processor is not in the corresponding mode, depressing the INSTRUCTOR button causes the central processor mode to change accordingly. When depression of the INSTRUCTOR button thus causes the interrupt mode to change, no program instructions are performed.

BOOTSTRAP Push Button

The effects of depressing the BOOTSTRAP button are given on pages 3-7 and 3-8 of the Equipment Operators' Manual. The following additional points should be noted: The contents of the memory local register and the current location counter of read/write channel one are altered by depression of the BOOTSTRAP button. The setting of the ADDRESS MODE buttons at the time the BOOTSTRAP button is depressed has no effect on the BOOTSTRAP operation. If the BOOTSTRAP button is depressed when either the PARITY indicator or the PROGRAM indicator is illuminated, the behavior of the system is unspecified.

SENSE Switches

The four SENSE push buttons can be used to control program flow, since each can be tested by program instructions which branch conditionally on the switch position. A SENSE switch reverses its state when pressed, but 50 milliseconds elapse before the switch finally assumes its new state. The program must be written accordingly, or the SENSE switches must be altered only when the central processor is in the STOP mode.

The SENSE switches are mounted in the lower right corner of the control panel. They are numbered one through four, as shown in Figure 1.

AC ON, AC OFF, DC ON, and RESET DC OFF Push-Button Switches

The functions of these four power switches are described on pages 3-8 and 3-9 of the Equipment Operators' Manual.
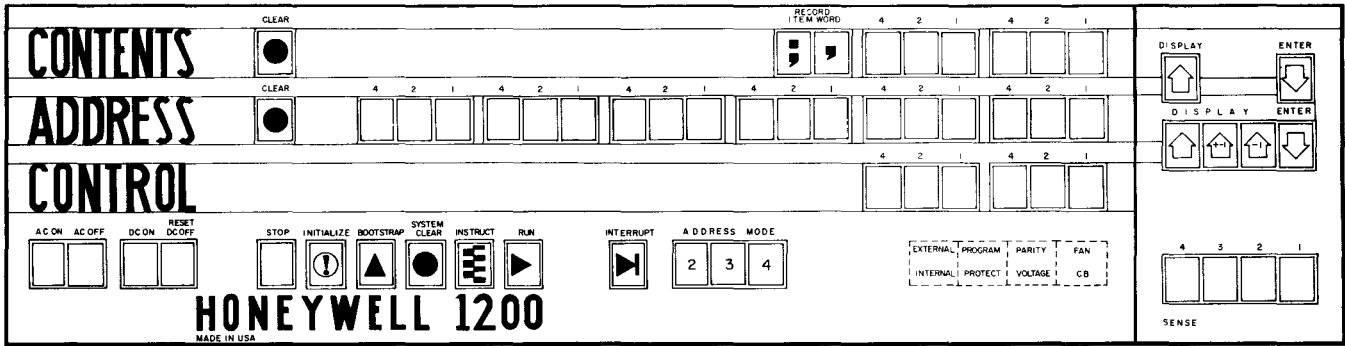
CONTENTS

ADDRESS

CONTROL

HONEYWELL 1200

Figure 1. Type 1201 Central Processor Control Panel

CONTROL PANEL BASIC PROCEDURES

The basic operating procedures of the control panel can be executed only if the STOP button is illuminated. If depressing the STOP button does not cause STOP to illuminate, the CENTRAL CLEAR button or the INITIALIZE button must be depressed before proceeding.

The basic operating procedures of the Type 1201 Control Panel are described on pages 3-11, 3-12, and 3-13 of the Honeywell Series 200 Equipment Operators' Manual, Order No. 040 Additional operating procedures are given below.

Abnormal Stop Procedures

The control panel power indicators (viz., VOLTAGE, FAN, and CB), the PARITY indicator, and the PROGRAM indicator signal the existence of abnormal stop conditions. The operating considerations for each of these occurrences is outlined below. It should be understood that the following procedures are intended only as guidelines and are not necessarily applicable or appropriate for every situation encountered. Obviously, detailed recovery procedures cannot be given for the numerous situations possible in widely divergent programming and operating environments.

VOLTAGE

If a VOLTAGE indication occurs, the system ordinarily stops operating altogether. In this case, the field service engineer should be called.

FAN

The FAN indicator may flicker intermittently during normal operations, but if the indicator illuminates and remains constant (in which case the system powers down), the field service engineer should be called.

CB

Illumination of the CB indicator denotes a circuit breaker actuation, in which case the system ceases operating. In this event, the field service engineer should be called.

PARITY

When a PARITY indication occurs, central processor operations stop and cannot be resumed normally by simply depressing the RUN button.

The run requirements of each installation vary, and the handling of error conditions is often a function of the type of run, e.g., production versus checkout. How a parity check is to be handled may be defined in the programmer's instructions to the operator or by locally established installation policy.

In the absence of specific instructions from the programmer, the operator may record the contents of pertinent control memory registers (viz., the sequence register, the A- and B-address registers, etc.), reset the PARITY indicator by depressing either the SYSTEM CLEAR button or the INITIALIZE button, and restart the program. It may be possible to effect a restart from some logical restart point in the program, or, if necessary, the operator may clear memory and restart the program from the beginning. If the parity check should recur, the field service engineer should be called.

NOTE: It is conceivable that a random fluctuation of the ambient air temperature may affect the operating characteristics of some of the electronic components in the system, thus causing a parity check. In this case, it may be possible to effect a restart (without clearing memory or resuming from a logical restart point) by resetting the parity check condition and manually stepping back through the program to the previous instruction and attempting to rerun from that point.

In addition to or in lieu of the procedures suggested above, the operator may also perform any other set of procedures specified locally by the installation.

PROGRAM

The PROGRAM indicator operates in conjunction with a program check function which detects the use of an illegal or non-installed optional op code.

Depending on the type of run (production or checkout) and the programmer's instructions to the operator, the operator may remove the present job, clear the program check condition by depressing either the SYSTEM CLEAR button or the INITIALIZE button, and start the next job. Before starting the next job, it is advisable for the operator to record the contents of all pertinent control memory registers and to dump memory so that the programmer is provided with a history of program execution for debugging purposes.

It if is possible to rerun a production program from the beginning or from some logical restart point, the use of the INITIALIZE button should be carefully undertaken.

The operator may also perform any other set of locally specified procedures for handling a program check.

Control Panel Checkpoint Procedures

A "checkpoint" is a programmed condition whereby processing is delayed or stopped to await an operator decision or action. The operator can easily recognize the existence of a checkpoint by observing the control panel. Any checkpoint is denoted by the control panel lights becoming constant to signify a machine halt.

Depending on the configuration of the control panel lights, the checkpoint (machine halt) may indicate simply the completion of a job or the necessity for a parameter entry by the operator. (The occurrence of a checkpoint implies that no abnormal stop conditions have occurred, e.g., a parity error.) The contents of the pertinent control memory registers (usually the A- and/or B-address registers) must be consulted in accordance with the programmer's instructions to the operator. In this way, the operator can determine the nature of the machine halt (by comparing the contents of the specified registers with predefined checkpoint codes) and then act accordingly. The actions which may be taken by the operator are those which are normally associated with job completion (e.g., demounting tapes, disposition of output, etc.,) or the control panel entry of a previously defined parameter which permits processing to continue according to programmer-specified operating options.

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TYPE 1201 CENTRAL PROCESSOR
HARDWARE BULLETIN

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ERRORS NOTED:

Fold

SUGGESTIONS FOR IMPROVEMENT:

Fold

FROM: NAME _____   DATE _____

COMPANY _____

TITLE _____

ADDRESS _____

_____

Cut Along Line

Cut Along Line

Honeywell

ELECTRONIC DATA PROCESSING

CRP