Instruction Sheet

SmartPAC PRO – PLC Status Message Option

The PLC Status Message Option has been developed to allow an end-user to display messages from ancillary equipment onto the SmartPAC PRO screen. This can prove helpful by letting the operator know the condition of external equipment by simply looking at the SmartPAC PRO screen. This option also allows the end-user to initiate an E-Stop or a Top-Stop command and message to the SmartPAC PRO control. This option expects the SmartPAC PRO to connect serially to a PLC's communication port.

The messages displayed on the SmartPAC PRO screen are written in the PLC logic and sent serially to the SmartPAC PRO. Therefore, all the work to implement this feature at the customer site is the responsibility of the end-user or an integrator.

This option can be used with or without the SmartPAC PRO PLC Interface Option (Item #9688615). If both options are used simultaneously, both of them must communicate with the same PLC.

Status Message, E-Stop and Top-Stop Description:

Status Messages and E-Stop or Top-Stop command/message can be sent directly from a PLC, or other device with a serial port, to the SmartPAC PRO. The messages themselves are sent up to the SmartPAC PRO serially from the PLC. Therefore the messages have to be programmed into the PLC device itself and transmitted according to custom ladder logic.

The Status Messages are displayed in a YELLOW message box on the SmartPAC PRO display. These messages can be automatically cleared using another properly formatted message from the PLC. These messages do not open either the E-Stop or Top-Stop of the SmartPAC PRO. It is expected that these messages would trigger some logic within the PLC that may open a relay associated with the PLC.

The E-Stop and Top-Stop commands/messages create RED fault boxes that are like other SmartPAC PRO fault messages. These messages remain on the screen and the SmartPAC PRO's corresponding relay remains open until the reset key is pressed.

Status Message Formatting:

This section describes how to format a Status Message string within the PLC so that the SmartPAC PRO recognizes it and responds accordingly.

The Status Message can contain up to 6 lines, with a total of up to 34 characters within each line. It is a good idea to keep the messages short and concise.

Send LF (0AH) at end of each line.
End the message string with a ;
The box size is determined by how many LFs are found in the message string.

The following message would get a 3-line box.

:09 This is a status message (LF)This is the second line(LF)This is the third line;

:0A; - Turns the message off.

Ack or Nak reply:

If the message is received okay then an Ack reply is sent

:ACK;

If the message is not received then a Nak is sent

:NAK;

Below are some examples of messages sent from the PLC to the SmartPAC PRO; your PLC will probably use a different protocol for the beginning of the message. The SmartPAC PRO will interpret the : (colon) and the following two digits to determine what action to take and how to display the message. It is important to remember that the ; (Semi-Colon) at the end of the message. The SmartPAC PRO will reply with and :ACK; if it interprets the message correctly.

PRINT#1 ":09 Turn Status ON;"

PRINT#1 ":0A;" /* Status Message OFF*/

PRINT#1 ":05 Hydraulic Die Clamp pressure is

too low;"

PRINT#1 ":06 The De-Stacker is full, it must (0AH)

be unloaded and palletized;"

E-Stop and Top-Stop Message Formatting:

⚠ DANGER

E-STOP AND TOP-STOP COMMANDS/MESSAGES NOT FOR SAFETY USE

Use PLC Status Message Option only for automation applications. The PLC Status Message Option should never be used for safety functions.

Failure to comply with these instructions will result in death or serious injury.

This section describes how to format an E-Stop or Top-Stop command/message string within the PLC so that the SmartPAC PRO recognizes it and responds accordingly.

E-Stop or Top-Stop fault message:
- Displays a 4-line red box
- You can send 4 lines of up to 34 characters each
- Send LF (0AH) at end of each line.
- End the message string with a ";"
- You can send individual strings but only end the last string with a ";"
- CR (0DH) characters are thrown away.

These fault boxes are like other SmartPAC PRO fault messages. The message will remain on the screen and the appropriate SmartPAC PRO relay remains open until the reset key is pressed. An E-Stop message must be prefaced by a ":05", a Top-Stop message must be prefaced with a ":06". Two examples of these type messages are below.

:05This is an E-Stop message(LF)This is the second line(LF)This is the third line (LF)This is the fourth line;

:06This is a Top-Stop message(LF)This is the second line(LF)This is the third line (LF)This is the fourth line;

Installing the PLC Status Message Option

The PLC Status Message Option normally comes factory-installed in your SmartPAC PRO. If you ordered the PLC Status Message Option *after* the original SmartPAC PRO purchase, you will have to upgrade the SmartPAC PRO firmware yourself. In this case, refer to the section "Upgrading SmartPAC PRO firmware" in your SmartPAC PRO manual.

Wiring Connections for SmartPAC PRO and PLC

⚠ DANGER

ELECTRIC SHOCK OR HAZARDOUS ENERGY

Dangerous voltages are present. Verify that the power to SmartPAC PRO and to your PLC controller have been turned off before servicing any components! Servicing must be performed by qualified personnel.

Failure to comply with these instructions will result in death or serious injury.

You need to complete the wiring between SmartPAC PRO and your PLC controller. You will need to obtain your own 3-conductor shielded cable, #22 AWG or equivalent. The PLC end of this cable must be wired with a user-supplied connector that plugs into the

RS-232 connector on the PLC and have the proper wires from the SmartPAC PRO terminal block connected.

1. *Verify that SmartPAC PRO and your PLC are still turned OFF!* Locate terminal TB7 on the SmartPAC PRO processor board (refer to the "location of components" in your SmartPAC PRO user manual). Also find the RS-232 port on your PLC. Refer to your PLC manual if necessary.
2. Run the cable through a dedicated, flexible liquid-tight conduit from your PLC to SmartPAC PRO. SmartPAC PRO is rated NEMA 12 (protected against dust and oil). You must use conduit of the same rating and make proper connections to ensure NEMA 12 protection.
3. Refer to the following table below to make the proper wiring connections.

SmartPAC PRO TB7	PLC
224	GND
225	RS-232 RXD
226	RS-232 TXD
229	(jumpered to 224)

4. Once you have finished the wiring, close the SmartPAC PRO and re-tighten the hardware. Turn power back ON to both SmartPAC PRO and to your PLC.
5. Check that SmartPAC PRO is operating normally. If it is working properly, you are now ready to use the PLC Status Message Option.

Configuring your PLC controller

Set up your PLC controller to the baud rate of 9600 bps. Also, set up the protocol as follows: **8** bit word, **NO** parity, and **1** stop bit.

Read your PLC technical manual first

Consult your PLC technical user manual. Remember, SmartPAC PRO does not change the way the PLC operates, or any parameters or limitations built into your PLC. Be sure you have read the manual and understand how your PLC works before making any setting changes.