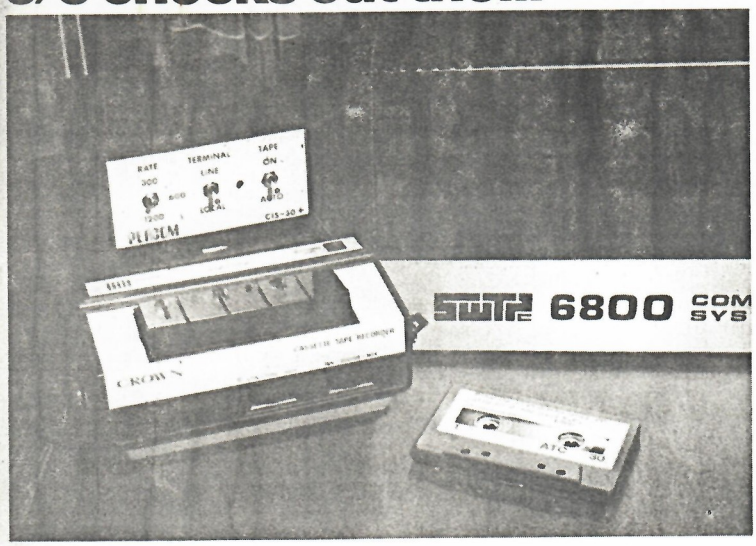
e/e checks out the...



PERCOM CIS-30+

Peripheral peace-maker ends computer/recorder mismatches

☐ Owning a bunch of interconnecting computer devices is like being the parent of 4 or 5 unruly children. Monitors, printers, and other assorted computer add-ons are notoriously incompatable, but the biggest trouble maker in most computer families is the cassette recorder. This innocent looking device never seems to be able to get along with anything unless its computer has a built-in cassette recorder interface. If it doesn't have one using an external computer/recorder interface can be a test of patience, skill, and the ability to bear failure after failure.

The biggest problem with computer/recorder interfaces is level control. If the recorder's input level to the interface isn't too high then it's too low; if the output from the computer to the recorder isn't so low that it allows tape noise to produce "trash" on the playback, then it is often so high that it distorts and produces harmonic "trash." When, after many trials and errors, you finally have it going right, it turns out that you didn't flip the correct switch the correct way, or the recorder didn't start, or any of a host of possible problems caused the system to break down.

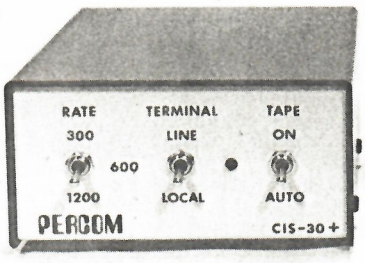
In short, until we got our hands on the PerCom CIS-30+ cassette interface for 6800 computers—in particular the SWTP 6800—we were less than thrilled with the add-on Kansas City cassette interfaces systems. But the PerCom CIS-30+ has changed all that. It is a remarkable device; extremely easy to use and set-up, and most important, virtually goof-proof.

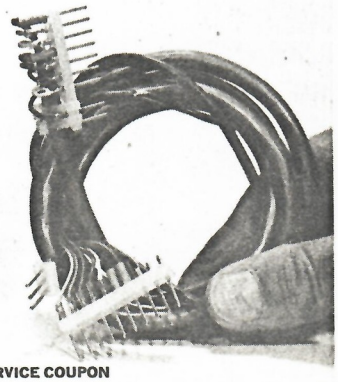
Operation. The PerCom unit is housed in a cabinet 4.25-in. wide by 2.1-in. high by 5.25-in. deep. It is completely self-contained except for the +5 and −12 VDC power sources which are provided by the host computer. It contains essentially two I/O interfaces in a single cabinet: for a data terminal and a cassette. The cassette I/O has independent record/playback circuits, thereby permitting dual cassette operation—playback from one recorder while recording on the other.

Unlike other Kansas City interfaces which provide for only the standard 300 baud rate, the PerCom has switch-selected rates of 300 (allowing interchange of recordings with other Kansas City systems), 600, and 1200. The 1200 baud rate is really a biggie if you can use it because it allows 4K of core to be dumped or loaded in only 40 seconds. Doing the same thing at 300 baud seems to take forever. Unfortunately, the *mikbug* monitor in the SWTP 6800 computer cannot load at 1200 baud, but PerCom provides a listing for software that permits dumping and loading in binary format at 1200 baud.

But assuming you don't want to get involved in 1200 baud operation because the data terminal must operate at the same baud rate as the recorder (if you don't want additional work and effort), let's stick to the 300 baud standard.

Note from the photographs that the PerCom has only three switches and a LED indicator between the *Terminal*

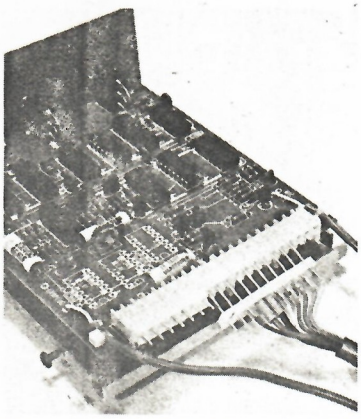




CIRCLE 58 ON READER SERVICE COUPON

As far as operating controls are concerned the PerCom-30+ recorder interface is the least confusing and easiest to use. Unlike other Kansas City interfaces, which are limited to the rather slow 300 baud rate, the PerCom can be used at 300, 600, and 1200, though 1200 requires some software adaptation with most 6800 based computers. For these owners an optional prewired connecting cable is available for $11.95. You save a lot of time, effort, by using the cable. Order the cable at the same time as the interface. For more information Circle No. 58 on the reader service coupon.

e/e PER COM CIS-30+



To connect the PerCom to your 6800 computer you plug one end of the connecting cable to the computer's I/O and the other end into the PerCom's Molex connector. That's the whole bit. There are no adjustment or alignment procedures other than making sure the playback level from the recorder causes the LED on the front panel to flicker as data is fed from the recorder; the LED should be neither off nor full on—the level that produces the flicker is the correct adjustment for the unit.

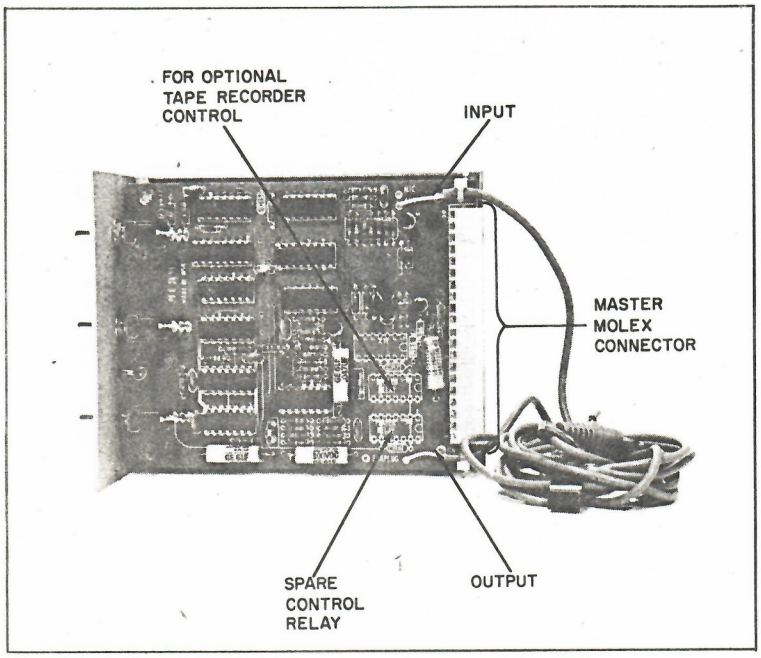
and *Tape* switches. These are the only switches you'll use if the *Rate* switch is set to 300 baud. When the *Terminal* switch is set for *Local* the associated terminal connects to the cassette recorder and vice versa—allowing the cassette data to be displayed on the terminal. When the switch is set to *Line* the terminal and the recorder are connected to the computer. When the *Tape* switch is set to *Auto* the computer can automatically switch the interface between the data terminal and the cassette input (for recording). For playback, the *Tape* switch is set to *On* (the cassette recorder is manually started), allowing input from both the data terminal and cassette. Proper level from the recorder to the interface is attained when the recorder's playback level control is adjusted so the LED on the PerCom flickers as the data is transmitted. The LED should neither be out, nor permanently on. There is no problem loading any K.C. tape if the lamp flickers (which cannot necessarily be said of other interface systems).

For those so inclined, the PerCom can be easily adapted with inexpensive optional components to provide remote control via the computer for two recorders; one for play, the other for record. (More on this later.) For the user who doesn't want to get involved in wiring and software, you can simply flip the recorder on and off manually to record (save) and load programs. The most you'll have to do is move the *Tape* switch from *Auto* (record) to *On* (play). Nothing could be easier.

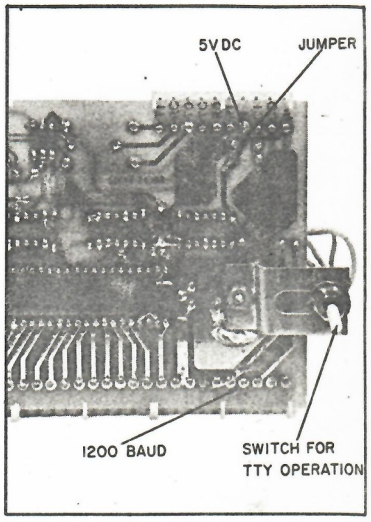
Installation. All connections to the interface are made through the Molex connector strip on the rear. Connection to the SWTP computer is made by plugging in to the MP-C or MP-S interface card in the SWTP computer. (Detailed instructions are provided for connecting to other 6800 CPU based computers, such as the MITS 680b.) A set of optional cables for the SWTP computer is available; we suggest you order them because they save a lot of cable preparation and eliminate the possibility of wiring errors.

Power is obtained from the MP-C interface card. The –12 VDC is already on the connector strip. The 5 VDC is obtained by adding a wire jumper from the regulated 5 VDC source on the MP-C card to the "dead" index

(Continued on page 83)



If you want computer-control of the tape recorders you simply install the components of an optional kit where indicated on the PerCom's PC board. There are no kluge connections or outboard wiring; all control components fit right on the board with the control circuits available on the "master" Molex connector on the back of the PC board. The shielded cables shown are the factory installed input and output for the recorder(s).



The –12 VDC voltage for the interface is already on the SWTP's I/O connector. The +5 VDC is attained by using what is normally the index pin. A jumper puts +5 VDC on this normally "dead" pin. The cable to the PerCom 30+ picks up the ..5 VDC along with the –12 VDC. The 1200 baud clock required for all three interface rates is obtained by cutting through the PC wiring to the 300 baud clock terminal going to the I/O's Molex connector and soldering a jumper from the 1200 baud clock (available on the Molex even though not normally used) to the PC wiring. The switch mounted on a bracket is a modification not for the PerCom) that shifts the I/O for TTY operation. (It replaces several jumpers normally used on the MP-C interface card.)

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pin of the connector strip. (The optional cable set has full length pins in all locations on the computer end so it picks up the 5 VDC for the PerCom.) Two other minor modifications (jumpers) must be added to the MP-C card. (Separate instructions are provided for the MP-S card which can be used with the later SWTP computers.) One of the modifications changes the 300 baud clock on the MP-C card to 1200 baud. The conversion back to 300 (and 600) baud is made by the PerCom; this is how the PerCom can record and handle data at 300, 600, and 1200 baud while other interfaces are limited to only 300 baud.

For remote control an optional set of DIP-packaged relays and other hardware is available ($10.95). The remote control kit is installed directly on the PerCom's printed circuit board and becomes part of the interface. All necessary wiring and connections to the Molex strip are part of the PC board. You simply place the components into the clearly indicated locations and solder.

The PC board has some other prewiring that can prove an attractive convenience for many hobbyists. For example, the output wire can be moved so it provides a lower level suitable for a recorder's microphone input; your recorder might not have an *aux* (high level) input. Similarly, there is a connection that permits bridging a small earphone across the input connection so you can monitor the data transmission from the recorder to the interface.

Instructions. If there is one truly outstanding aspect of the PerCom interface it is the instructions and engineering notes. Quite often, personal computing equipment comes with the absolute minimum in instructions, which also assume you're an expert to start with. Other times the instructions refer you to books and references which require even greater computer expertise.

The PerCom CIS–30+ on the other hand, comes with outstanding documentation, a virtual standard of excellence. Every detail is spelled out in sequence, with almost every contingency taken into account. Best of all, it assumes the user is a hobbyist, not a computer expert. And if this weren't enough, there are the Technical Memos. The president of PerCom must be an enthusiast who likes nothing more than sharing his knowledge with others. He periodically issues Technical Memos (engineering notes) concerning better utilization of PerCom products. For example, there are memos on connecting the CIS–30+ to other 6800 computer systems, selecting a cassette recorder with specific recommendations on available brands, adapting for a parallel I/O using a UART, and modification of the SWTP coresident Editor/Assembler for high speed operation using the CIS–30+ and a standard ASCII printer.

These memos are some of the best hobbyist-level material we've seen, and they are available at minimal cost (25¢ and 50¢). Many were supplied with the CIS–30+.

Kit or Wired. The PerCom CIS–30+ is available in kit ($69.95) and wired ($89.95) form. If you build the kit you should use a socket kit, which costs an additional $4.95. We suggest you forget about the kit and go the factory-wired route. The $15 difference in price is well worth not having to align the unit, and possibly troubleshooting unfamiliar circuits if you make an error, or have a defective component. The optional remote control kit (which you can install yourself in the kit and wired units) costs $10.95, and it's really only needed for automatic control of two recorders.

For additional information on the PerCom CIS–30+ cassette interface write to PerCom Data Co., 4021 Windsor, Garland, Texas, 75042; or circle No. 58 on the reader service coupon. ■