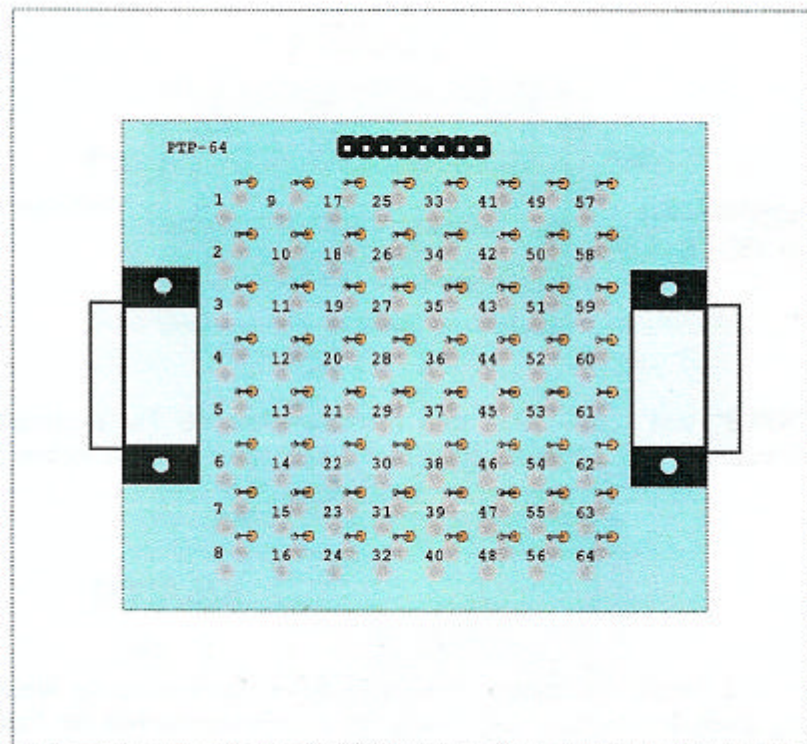


PTP-64

Instruction Manual



Note

This manual as well as the hardware module PTP-64 was produced with great care. Should you have any comments, corrections or suggestions to the manual or the module please forward them to the address below.

Basic knowledge about electronic components and soldering skills are a prerequisite before attempting the assembly of this module. If needed, consult appropriate literature about this subject first.

When operating this unit, please follow the relevant safety rules. No guarantee or restitution for damage or subsequent damage caused by this product will be made. Any warranty will be void if this manual isn't strictly followed.

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1. Introduction

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The PTP-64 module was developed for the simple connection of push buttons to a PLV-32 module and controlled with the STP software (version 4 and up). The push buttons are used in switchboards for operating turnouts, signals, and routes as well as for specially assigned tasks. Three PTP-64 with up to 192 push buttons can be connected to one PSA-32 module.

All 2-pin momentary closed push button switches may be used, especially switches designed for low voltage applications. Latching switches or all types of rocker switches are however not suitable. Push button switches can also be connected directly to a CSA-32 module (see STP manual). The wiring however is considerably easier using PTP-64 modules.

Please note that the last PTP-64 connected to a CSA-32 module needs to be equipped with terminating resistors (e.g. 10 k-ohm) in place of the DB-9 socket.

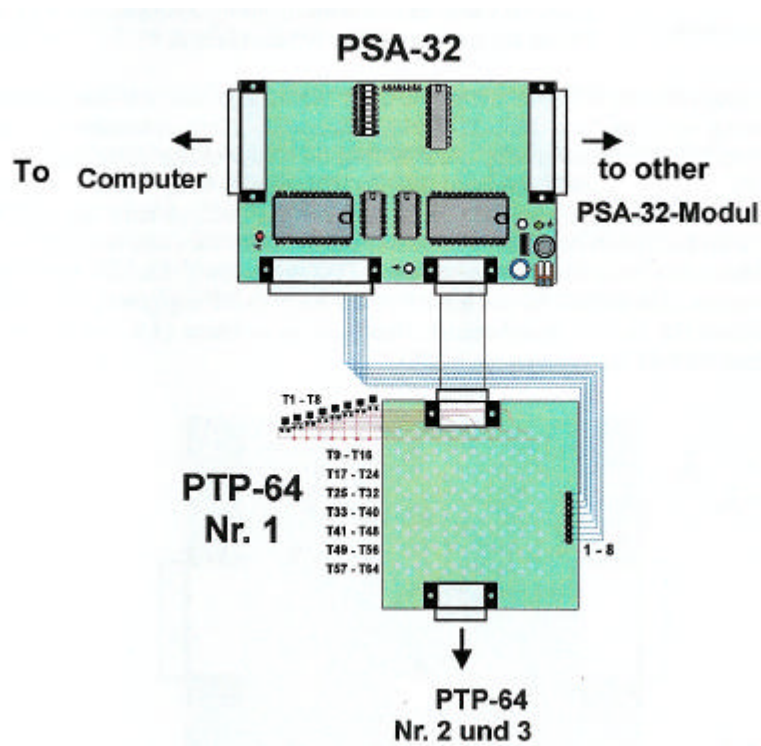
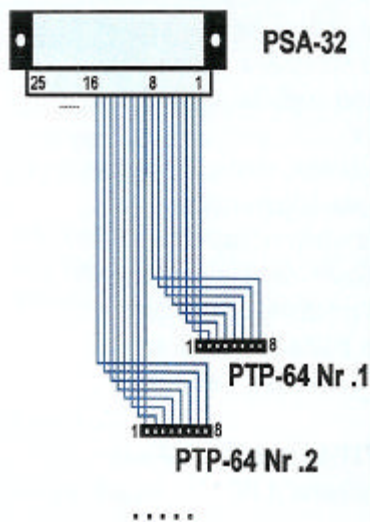


Fig. 1: PTP-64 connecting diagram

For the following explanations of component positions please view the PTP-64 board with the 8-pin edge connector above and the soldering pads facing you. In this position the text identification “PTP-64” will be located at the left upper corner of the board. A 9-pin wire connects the CSA-32 module with the PTP-64, both of which are equipped with a DB9 socket. All connections are 1:1 (connector pin 1 to socket pin 1, connector pin 2 to socket pin 2 and so on). The same kind of cable is also used to connect PTP-64 modules with each other. As already mentioned, eight terminating resistors need to be installed instead of a DB-9 socket (right side) on the last PTP-64 that is part of several, connected to a CSA-32.



Additionally, eight wires are connected between the 25-pin socket of the CSA-32 module and to each upper 8-pin socket of the PTP-64 modules. The first PTP-64 is connected to pin #1-8 of the CSA’s 25-pin socket. The second PTP-64 connects to pin #9 - 16 and the third PTP-64 to pin #17 - 24. Pin #25 of the CSA-32 module’s 25-pin socket remains open. A maximum of 3 PTP-64 can be connected to one CSA-32. The pin numbers are marked on the CSA-32 socket; upper row right to left = pins 1 - 13, lower row right to left = pins 14 - 25. Pin #1 of the PTP-64 socket is on the left (closer to the DB9 connector) while pin #8 is on the right (closer to the DB9 socket). A DB25 connector with flat ribbon cable is the perfect fit for the 25-pin socket of the CSA-32 module. The ribbon cable works well to separate a block of 8 wires for the connection to the PTP-64.

Power to the PTP-64 is supplied by the CSA-32. No extra power supply and no address or other initialization process is required. Two octagon shaped solder pads are provided for each pair of push button connecting wires. The one solder pad is located below the accompanying resistor. The second solder pad is just below and to the left of the first pad. Start with the first solder pad on the top left and work your way down. Then continue with the second row (9-16) and so on. The numbers marking the solder pads are for the first PTP-64 that is connected to a CSA-32. Add 64 to the numbers shown on the second board and 128 on the third. For example: the push button connected to the second solder pad of the third PTP-64 is push button #130. Please note, that even in the STP software the push button number is assigned according to the CSA-32 address. For example: the push button connected to number 18 of the third PTP-64 board, which in turn is connected to a CSA-32 with address 7 (according to

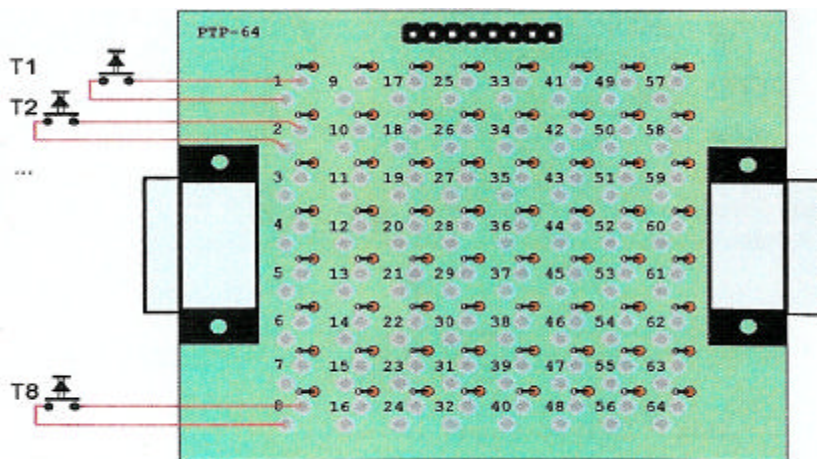


Fig. 3: Push button connection

and 128 on the third. For example: the push button connected to the second solder pad of the third PTP-64 is push button #130. Please note, that even in the STP software the push button number is assigned according to the CSA-32 address. For example: the push button connected to number 18 of the third PTP-64 board, which in turn is connected to a CSA-32 with address 7 (according to

DIP-switch settings), has the address 7.146 (146=2x64+18, see Fig.1) More information on this subject can be found in the STP manual.

Code	Quantity	Description	Conrad part#
K1	1	DB9 connector, angled for board mounting	741167
K2	1	DB9 socket, angled for board mounting ⁴⁾	741345
K3	1	8-pin strip in single row, 2.54mm pin config.	739448 ¹⁾
D1 - D64	64	Diode, 1N4148 ²⁾	162280
R1 - R8	8	Resistor, 10k-ohm, ¼ W ³⁾	404160 ¹⁾
	1	8-pin socket in single row, 2.54mm pin config.	

- 1) Packaged in larger numbers than needed.
- 2) Only as many as the number of push buttons installed are needed.
- 3) Necessary only at the last of three **PTP-64** connected to a **CSA-32**
- 4) Not needed at the last of three **PTP-64** connected to a **CSA-32**

2. Parts List

The following parts are required to build the PTP-64 module. Four mounting holes in each corner of the board are provided to mount it easily under a switchboard, for example.

The “Code” column uses the component ID found on the component layout plan.

Additionally, a 9-pin connecting cable with SUB-D male and female connectors is required for the connection of a CSA-32 or additional PTP-64’s. Further modules can either be plugged together directly or using above-mentioned cables. Moreover, a 25-pin flat ribbon cable with DB 25 connector is required for the connection to the DB 25 socket of the CSA-32 module. 8 out of the 25 wires are connected to the single row 8-pin connector (K3) of a PTP-64 module (see previous chapter).

3. Putting it together

The following tools are needed to put the module together:

- Soldering iron with a small tip
- Thin solder
- Small side cutters
- Small pliers
- Exacto knife or similar

Building this module is easy and fast but requires careful attention. The use of a small soldering tip is highly recommended.

First position the empty board in front of you so that the inscription “PTP-64” is on the top left and the octagon shaped solder pads are facing you. We start with the installation of the diodes (D1 - D64). They will be installed vertically and to facilitate that bend one of the legs by 180 degrees. Insert and solder the diodes through the holes above and to the right of each solder pad. Important: the diode’s cathode (marked with a ring on the diode body) points to the right, that is, away from the respective solder pad. The diodes are installed in reverse when used in conjunction with a **PSA-32** board. Of course, only solder pads that are later actually connected to push buttons require diodes. Inserting the diodes from the other side of the board may ease the soldering of the push button wires that follows later. Next, we’ll install and solder in place a 9-pin SUB-D male connector (K1) on the left side and a female SUB-D socket (K2) on the right side of the board. As already mentioned, no SUB-D socket will be installed in the PTP-64 module that is the last of three connected to a CSA-32. Instead, eight 10 k-ohm resistors will be soldered in its place. The order in which the resistors are installed is shown in the layout schematic below. (Attention: both, the DB-9 socket and the resistors are shown). At last, the 8-pin strip (K3) is soldered in place at the top center of the circuit board.

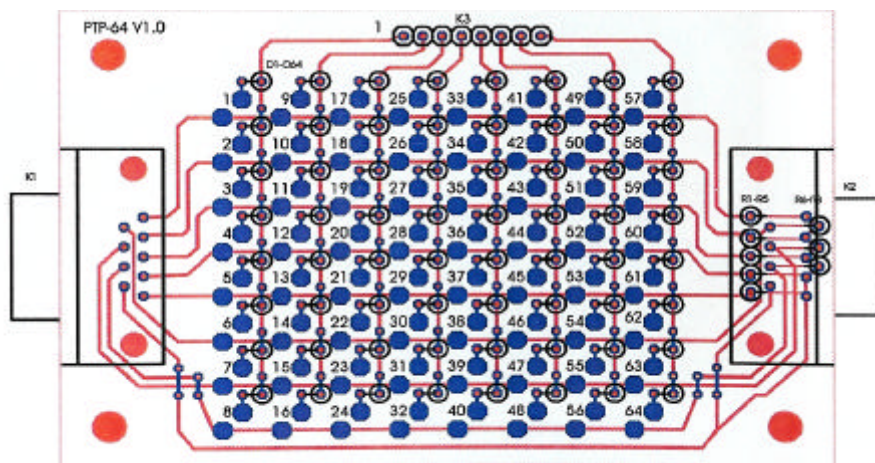


Fig. 4, component layout

The module is now finished. Please take the time to carefully check the back side for “cold” solder joints and possibly unwanted solder bridges.

4. Testing

After finishing the module a functional test is in order. For that we need a working CSA-32 module. Connect a 9-pin cable to the DB9 connector (K1) of the PTP-64 and the other end to the CSA-32 (see chapter 1). The PTP-64 has to be one with terminating resistors or another one with such resistors has to be plugged in to this one. Then connect pins 1 - 8 of the CSA-32's DB25 socket to the 8-pin strip (K3). Solder the push button connecting wires to the solder pads 1, 2, 9, 10 and 64 of the module.

Next, connect the CSA-32 module with a computer (as per CSA-32 manual) and a power source (use 2-pin connector of the CSA-32, 8-28V DC or AC, polarity doesn't matter, also see CSA-32 manual).

Use PCANView to carry out tests as described in the CSA-32 manual.

If no reactions are noticed in PCANView after pushing some buttons, check the orientation of the diodes as well as for possible shorts caused by the connecting pins of the termination resistors.

More information is found in the STP manual on how to wire a PTP-64 module, determining the correct address (in STP) and operating it with a PC.