UP0 LINE EXTENDER FOR SIEMENS TDM SYSTEMS

USER MANUAL

Version 1.1
June 2026

TRX Krzysztof Kryński
03-986 Warszawa
44 Kosmatki St.
Tel. +48 22 871 33 33

APPLICATION

Up0 Extender for Siemens TDM systems shall be used whenever there is a need to use Siemens TDM phones on remote locations (distance measured in kilometres from the PBX).

FEATURES

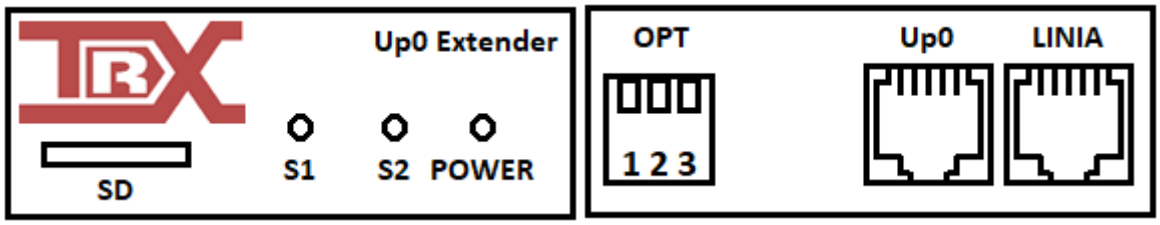
Up0 Extender increases the range of Up0 digital lines up to several kilometres. Its operation has been verified on a single-pair AWG22 twisted cable /ϕ = 0,643mm/ of length approx.12km, in industrial environment, loop resistance approx. 1200Ω.

Operation with OptiPoint and OpenStage series of Siemens TDM telephone has been tested.

Two devices per single Up0 line are required, one at PABX site, another at phone site.

At the PABX side the device is powered directly from Up0 line. At the phone side both the extender and the TDM phone must be powered from external power supply (20-60VDC). The extender's power consumption is less than 1W.

APPEARANCE



SD – for firmware upgrade only,
S1 – LED signalling synchronisation on link between a pair of extenders,
S2 – LED signalling synchronisation on Up0 line,
POWER – LED signalling if the device is powered,

OPT – piano switches for device configuration,
Up0 – socket to connect Up0 line to,
LINIA – socket to connect the other extender to.

CONFIGURATION

For a pair of extenders to work correctly, it is necessary to setup one of them in *at PBX* operating mode and another one in *at telephone* operating mode. Piano switch OPT1 (first from the left) makes it possible.

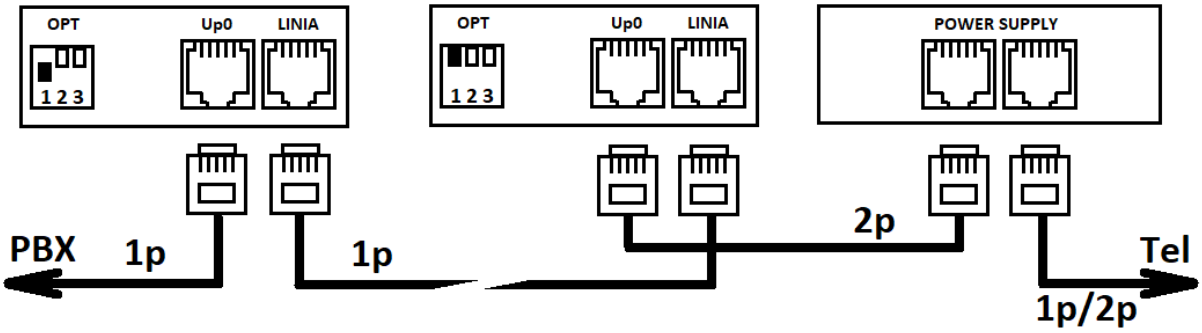
- *at telephone* operating mode,

- *at PABX* operating mode.

Extenders will not connect to each other and solution will not work if both have the same operating mode set.

Options OPT2 and OPT3 are for fine tuning to UP0 line. For standard operation these do not need to be activated.

CONNECTIONS



The first extender operates at PBX site and is being powered directly from Up0 line.

The second extender operates at system telephone site. Together with the telephone – it needs to be powered by an external power supply dedicated for system phones (i.e. Salcomp C39280-Z4-C510).

The power is being supplied on the second pair in a wire. The extender adds it to the digital signal on the first pair in wire and puts it back to the telephone via the power supply. This allows to connect the TDM telephone with a single pair wire and it will work.

CAUTION: A short on a pair of wire to the phone will cause the malfunction of the extender.

START UP

If all connections are correct, pair of extenders will try to establish a link. This may take up to several seconds, particularly when operating over long cable distances and/or in harsh industrial environment.

After the link between expanders is established, they work in a transparent manner from the audio signal point of view. Audio signal is retransmitted bit-perfectly. For the signalling data additional features were developed to protect it from corruption and to ensure its delivery to the other side of the link.

Up0 extenders maintain the sync in between PBX and the TDM telephone. All the clocks are locally synchronised with DPLL.

In operation, all LEDs shall glow in green colour. Short and spontaneous blinking of theirs means unusually big phase correction for internal DPLL circuits and shall not cause concerns about device operation.

FIRMWARE UPGRADE

Firmware upgrade procedure:

- turn the extender off,
- prepare uSD card with FAT32 filesystem in it,
- put firmware file in the root folder of the card, make sure it is called *upgrade.upg*.
- put the card into the extender and power it up,

The device shall update its firmware automatically, and start standard operation after a few seconds. **Upgrade file will be deleted if the upgrade process was successful.**