PSU A17/38 Ancillary Power Unit

Introduction

This leaflet covers the installation of ancilliary 24 V power supplies for FIRECLASS fire alarm systems.

These units are closely based on FIRECLASS control panels. The units comprise these components which are common to FIRECLASS control panels:

- A metal housing, containing the following components:
- A PSU, assembled with a PMM800 monitoring board.

Also included are sundry items, such as spare fuses, in a separate bag.

Table 1 shows details (see also the section "Specifications" on page 9).

Unit	Intended Battery Capacity	Order Code
PSU A17	17 Ah	557.200.732
PSU A38	38 Ah	557.200.733

Table 1: Unit details

Note that the batteries must be obtained separately, along with a fitting kit. For the order codes see Table 3. The PSU A38 has a deeper housing to accommodate larger batteries. This is the only difference between the units, so the installation procedure below is the same for both.

This leaflet also covers the installation of a FC410MIM board, so that the power supply fault signal can be interfaced to the addressable loop. For details go to page 7.

Installation – PSU A17/38

DANGER

Danger of death or serious injury.

The unit contains high voltages, producing a danger of death or serious injury.

Before working on the mains connection, make sure the cabling is not live. Ensure the cabling is not connected to the supply, or that the supply is isolated.

Note the dangerous voltage warning sticker on the chassis plate. This is item 4 in Fig. 3.

Ensure adequate earthing of the system. In addition to any earthing requirements in the local regulations, also follow these stipulations:

- **All exposed metalwork and cabling conduits must be returned to earth at the PSU unit.**
- **The housing must be earthed, following the procedures in this guide.**

How to install a PSU A17 or PSU A38

1 Ensure you will be complying with local regulations. These are expected to cover such items as:
   – Wiring specifications
   – Housing siting restrictions
   – Provision for mains isolation
   – Earthing arrangements
   – Environmental conditions
   – Qualifications of personnel

   (This is not an exhaustive list.)

   For example there may be a stipulation that the connections for the mains supply and pro-

tective earth can only be made by a qualified electrician.

2 Check the Mounting Location.

The PSU unit is not weatherproof. Check that the location is indoors, dry and free from excessive dust.

Although the PSU unit mounting position should already have been determined, as a double check, you can check the dimensions shown in Figure 1 and Figure 2.

The drawings provide guidance on the cable entry points through the housing walls

Note that the PSU unit doors have their hinges on the left, and swing fully open, through more than 180^{o}.

3 Mount the Housing.

Decide on a wall mounting method, this will typically be screws into wall plugs. Now assess the required sizes of the fastenings. Take into account the type of wall (solid brick, wood and so on). Also take into account the weight of the PSU unit. The size of the batteries will have a large influence on the weight.

For the upper (centre) mounting hole, mark on the wall the drill hole position. This mounting hole is item 4 in Fig 1 on page 4. Now drill and plug this hole.

Insert a screw to suspend the housing from the upper hole. The housing features a "keyhole". This allows you to insert the screw into the bare wall, then drop the housing onto the screw (rather than screwing with the housing in position, through the back wall).

Ensure the housing is horizontal, then for the lower mounting holes, mark on the wall the drill hole positions. Drill and plug the bottom fixing holes. Insert screws to complete fixing the housing to the wall.

For larger capacity batteries, it may be necessary to also use the upper fixing holes, because of the extra weight.

Check the housing is physically secure.

Remove debris from the housing.

4 Connect the Mains Cable.

Make sure the mains cable is not connected to the supply, or that the supply is isolated.

On the PSU locate the mains connector, at the top of the unit. If the protective cover is fitted to this connector, remove it. For details of the cover and connector see Fig. 4 on page 7.

Remove the appropriate knockout and feed the mains cable through. Use a gland if necessary.

Connect the mains input cable to its connector (item 1 in Fig. 3 on page 6). Fix the mains cable using the clip near the mains input connector.

Connect the protective earth conductor of the mains to an unused terminal of the housing earthing block. This block is item 3 in Fig. 3, marked with an earth symbol. Do not use the terminal occupied by the conductor connected to the power supply module.

Re-fit the PSU mains connector cover.

System 0 V must not be connected to earth, so take meter readings to check this. As a meter probe point, use one of the "0V" terminals of the connector at the top of the PMM800 (the PMM is item 6 in Fig. 3 on page 6, mounted on top of the PSU).

5 Fit the batteries. The battery fitting kit (clamp) and batteries must be obtained separately. For the order codes see Table 10.

Remove the battery fuse from the PMM800 board (the fuse is Item 7 in Fig. 3).

Connect the battery cables to the terminals marked **BATT+** and **BATT-** on the PMM800 board. There are two of each terminal, you can use either one. Connect the red cable to positive, the black cable to negative.

Place the batteries in the bottom of the housing.

Connect the battery cables to the battery. Connect the red cable to the +ve terminal. Connect the black cable to the -ve terminal.

Fit the battery retaining clamp. For details refer to the instruction leaflet provided with the clamp.

Connect the inter-battery lead between the batteries (+ve to -ve terminals).

Identify the temperature compensation thermistor lead. If necessary connect this to the connector marked "THERMISTOR J3" on the PMM800. Tape the thermistor at the end of the lead at a convenient location on the side of a battery.

Re-fit the battery fuse.

Label the batteries with the current date.

6 Connect the 24 V cables.

Remove the appropriate knockout and feed the pair of 24 V cables through.

Identify the positive cable and connect this to one of the "24 V" screw terminals at the top of the PMM800 board (see item 5 in Figure 3). Identify the negative cable and attach this to one of the "0 V" terminals.

Repeat for each required 24 V cable pair.

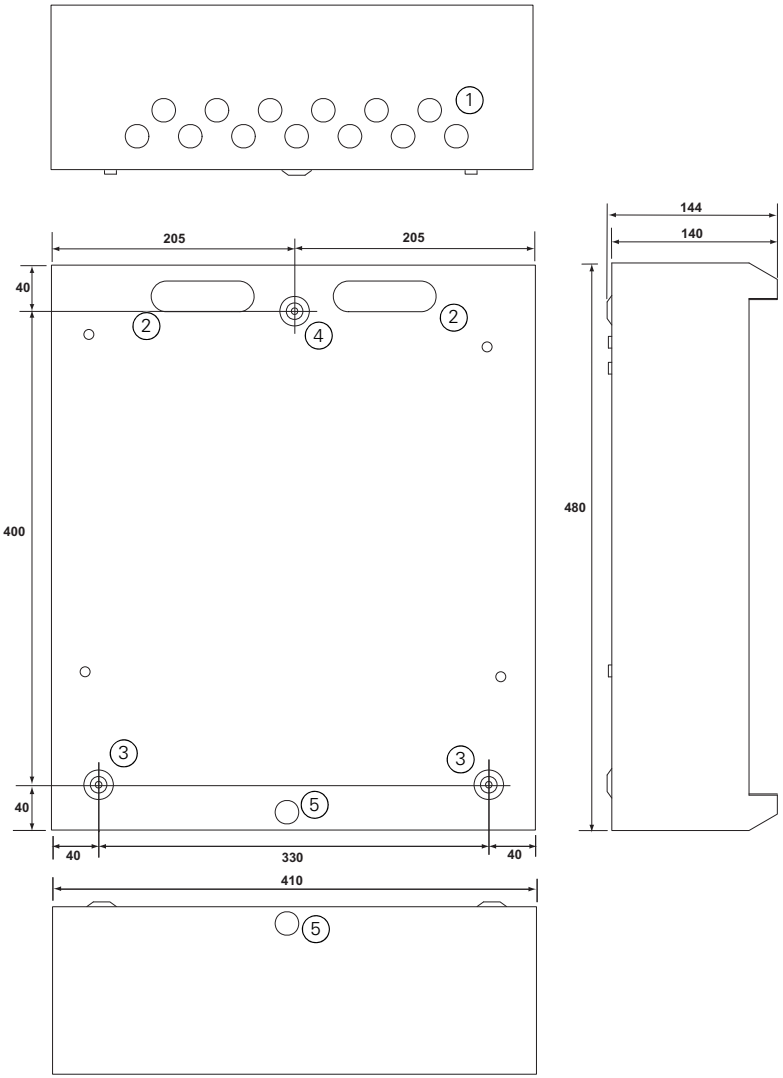

Fig. 1: Housing Overall and Fixing Dimensions - PSU A17
1– Knockouts Ø 20 mm (13x)
2– Knockouts
3– Mounting hole Ø 5.5 mm
4– Mounting hole Ø 5.5 mm
5– Knockouts Ø 20 mm

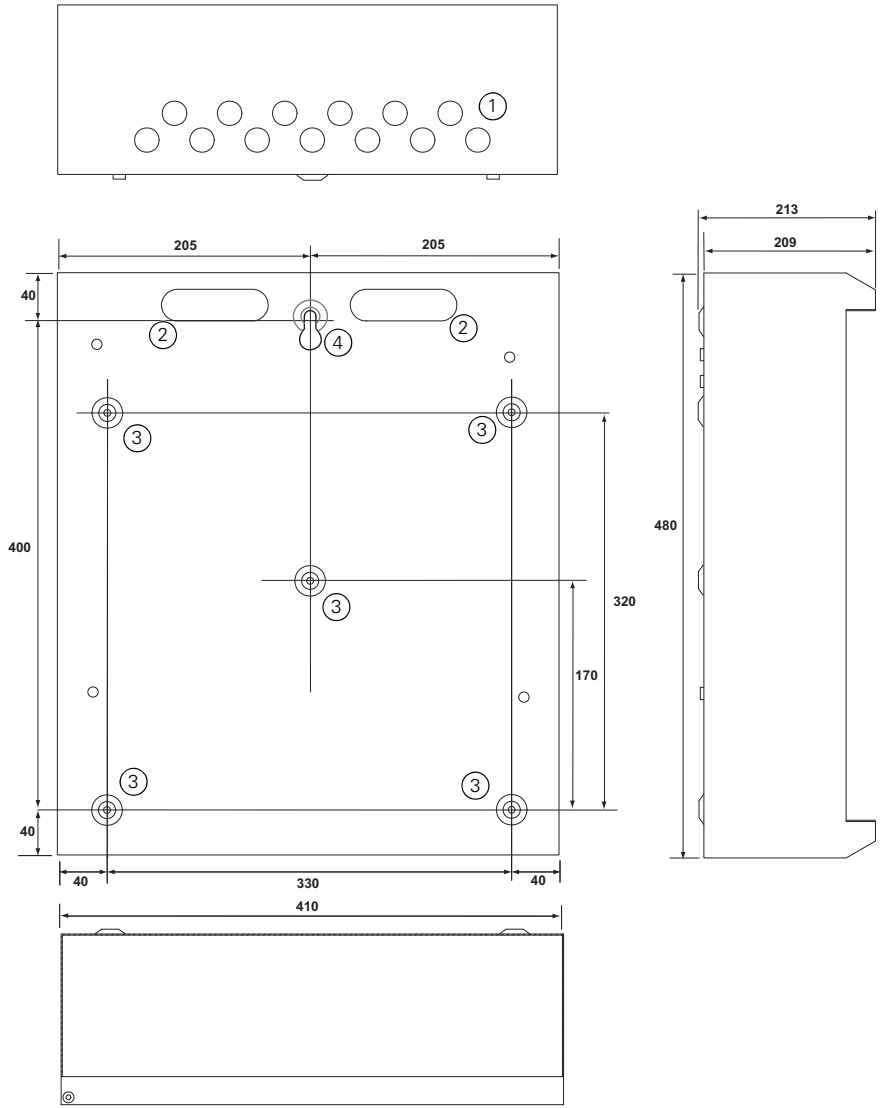

Fig. 2: Housing Overall and Fixing Dimensions - PSU A38
1– Knockouts Ø 20 mm (13x)
2– Knockouts
3– Mounting holes Ø 5.5 mm
4– Mounting hole Ø 7.5 mm

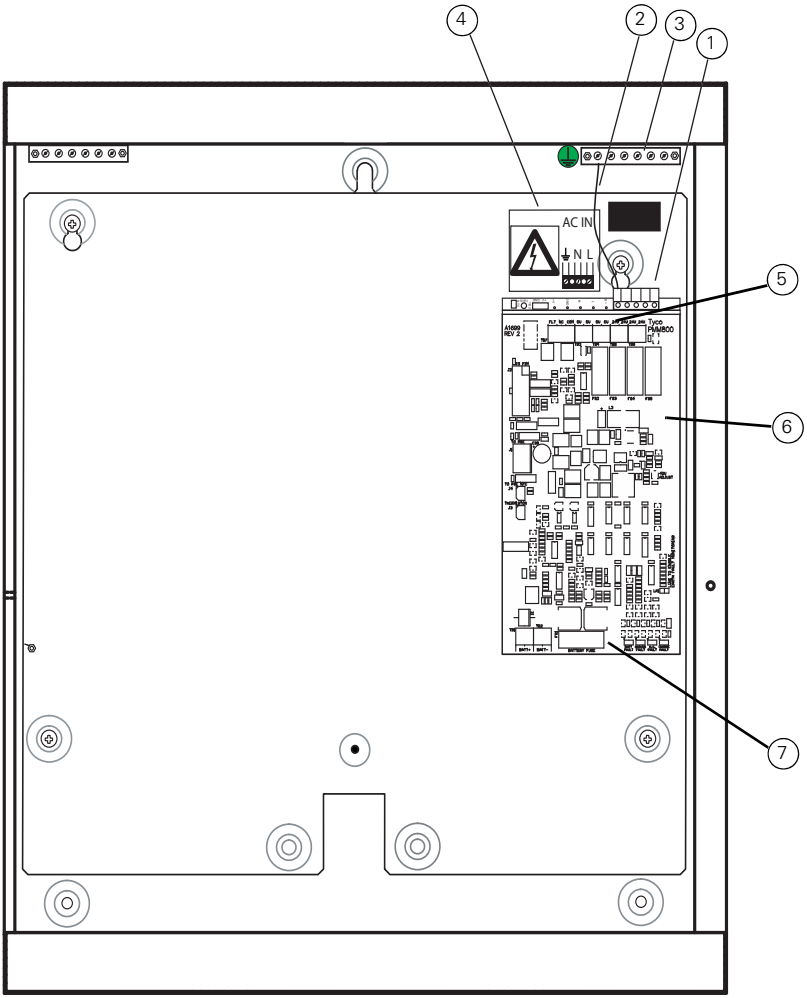

Fig. 3: Housing Internal View
1– Mains input connector
2– Protective earth wire
3– Housing earth connector
4– Dangerous voltage warning label
5– 24 V Output screw terminals
6– PMM800 (mounted on top of PSU)
7– Battery Fuse

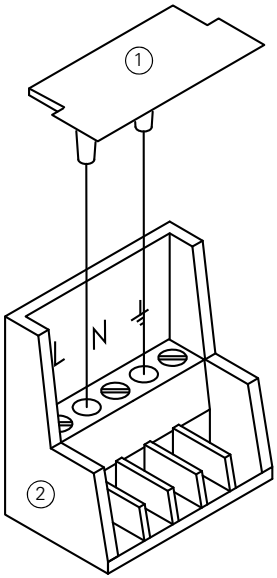

Fig. 4: PSU Mains Connector Cover (detail)
1– Cover
2– PSU mains connector

Introduction – PSU Monitor Kit

A FC410MIM acts as an interface between the fault output relay of the PSU's PMM800 board and an addressable loop.

When fitted in a PSU A17 or PSU A38 unit, the FC410MIM allows the fire alarm system control panel to monitor the state of the PSU over the loop, so the panel can process any PSU faults that occur.

For installation into a PSU A17/38 you need the PSU Monitor Kit, 557.202.707.This includes the FC410MIM board, mounting hardware and cables.

Installation – PSU Monitor Kit

This section details how to install a FC410MIM board into a PSU A17 or PSU A38.

How to mount and wire the FC410MIM

1 For this procedure refer to Figure 5. The item numbers in the procedure refer to Figure 5 (unless indicated otherwise).

  Remove the two lower screws fixing the MPM800 board (the MPM800 board is item 6 in Figure 3).

2 In place of the screws insert the threaded stud ends of the supplied standoff pillars.

3 Fit the FC410MIM to its bracket (Item 1). To do this first locate the tab of the FC410MIM into its hole in the bracket (Item 2). Then insert the M2 securing screw (Item 3).

4 Fix the assembled FC410MIM and mounting bracket to the standoff pillars, using the supplied screws.

5 Take one of the supplied 100 Ohm resistors and form the legs. Take care not to bend the legs immediately where they join the resistor body.

6 Fit the resistor loosely in the screw terminals. Fit the resistor between the "SH" terminal and the "IN-" terminal.

7 Insert the orange wire (Item 5) into the "IN+" screw terminal. Insert the yellow wire (Item 4) into the "SH" screw terminal.

8 Tighten the screws. Make sure both the resistor leg and wire are clamped securely.

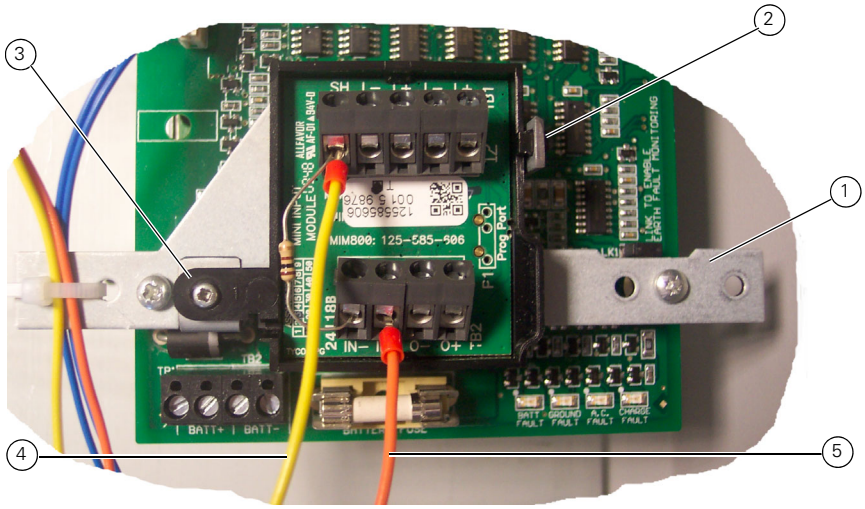

Fig. 5: FC410MIM *Detail*
1– Mounting bracket
2– Locating tab
3– Securing screw
4– Yellow wire
5– Orange wire

How to connect the FC410MIM wires at the PMM800

1 Note that for this procedure, refer to Figure 6. Take the remaining supplied 100 Ohm resistor and form the legs.
2 Fit the resistor loosely into the screw terminals. Fit the resistor between the "NC" and the "COM" terminal.
3 Insert the yellow wire (Item 1) into the "NC" screw terminal. Insert the orange wire (Item 2) into the "COM" screw terminal.
4 Tighten the terminal screws. Make sure both the resistor leg and wire are clamped securely.
5 Use the supplied cable tie to fix the wires to the FC410MIM bracket as shown in Figure 5.

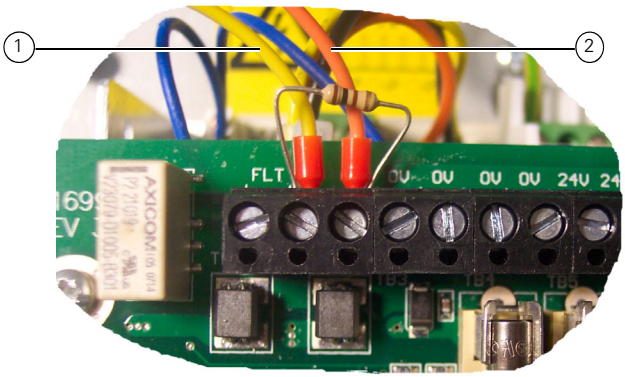

Fig. 6: FC410MIM *wires at the PMM800*
1– Yellow wire
2– Orange wire

Specifications

The power supply is a BAQ140T24. Combined with this is a PMM800 power monitoring and routing module. The PMM800 also provides continuous charging of the back-up batteries.

General

- Mains Supply:
  230 V AC, 50/60Hz. Input current 1.6 A. Input power 380 Watt maximum.
- Output:
  Four "24 V outputs" (screw terminals). Range 21 to 28.6 V DC.
  27.15 V DC nominal output for fully charged battery on trickle charge, at an ambient temperature of 25 °C.
- Output Capacity:
  3.1 A continuous excluding battery charge current. 5 A maximum for zero charge current.
  I minimum 0 mA.
- Current consumption operating from battery standby supply 35 mA.
- ImaxA 3.1 A, ImaxB 5.0 A, Maximum internal resistance of the battery and associated circuitry 0.35 Ohms, as defined by EN-54 Part 4.
- Common fault output: relay contacts normally open, closed when fault.
- Fuses:
  24 V outputs fitted with 1 A fast blow 5 x 20 mm glass fuses.
  Battery fitted with an 8 A slow blow 5 x 20 ceramic fuse.
- Operating Temperature -5 °C to +40 °C.
- Relative Humidity: 95% (non-condensing).
- EMC:
  – Immunity complies with EN501030-4 1.
  – Emission complies with EN61000–6-3.
- Storage temperature -20 °C to +70 °C.
- Approvals:
  Complies with requirements of EN54-4 1997 + Amendment 1 and 2.
  PSU A17 and PSU A38 are EN54-4 approved without the use of a FC410MIM.
  FC410MIM is EN54-18 approved with an equivalent housing to an MK double gang box.

PMM800

- Battery monitoring and protection.
  – Detection of high resistance batteries and their connections to the PMM800.

  - Battery connection open or short circuit detection/protection.
  - Reverse polarity battery connection protected by 8 A slow blow fuse.
  - Deep discharge protection.
  - Intelligent battery connect/disconnect circuitry.
  - Charging voltage regulated by a thermistor sensor to compensate for changes in ambient temperature.
- Charger monitoring and protection.
  - Failure of the AC supply.
  - Open circuit of either battery FET.
  - Blown or missing battery fuse.
  - Open or short circuit of the connections from the PCB to the thermistor.
- Earth fault monitoring.

  Detection of low resistance path from earth pad to rail voltages between -6 V and 6.5 V and between 11 V and 42 V.

  If earth monitoring is required, a link must be fitted to the "EARTH FAULT MONITORING' HEADER LK1".
- Diagnostic LEDs for the following conditions:
  - AC FAULT
  - CHARGE FAULT
  - BATTERY FAULT
  - GROUND FAULT
- Connections are as shown in Table 2.

Connection	Function
TB1	2 x BATT+ outputs
TB2	2 x BATT- returns

Table 2: PMM800 Connections

Connection	Function
TB3	2 x 0V returns
TB4	2 x 0V returns
TB5	2 x 24V 1A fused outputs
TB6	2 x 24V 1A fused outputs
TB7	Fault relay, FLT/NC/COM
J2	Connects power to PL2 on the FIM

Table 2: PMM800 Connections (cont.)

Ordering Information

Table 3 shows the order codes.

Item	Order Code
PSU A17	557.200.732
PSU A38	557.200.733
PSU Monitor Kit including mounting plate, fixings and cables	557.202.707
17 Ah battery	PS-12170
38 Ah battery	PS-12380
17 Ah battery fitting kit	557.201.307
38 Ah battery fitting kit	557.201.308

Table 3: Order codes

CPR Information

Tyco Fire & Security GmbH,
Victor von Bruns-Strasse 21,
8212 Neuhausen am Rheinfall,
Switzerland
15
2831-CPR-F0533
21
0832-UKCA-CPR-F0343
DoP-2015-4143

EN 54-4: 1997 + A1: 2002 + A2: 2006
Power supply equipment for fire detection and fire alarm systems for buildings
PSU A17

Essential Characteristics
EN54-4: 1997
Performance of power supply: Pass
Operational reliability: Pass
Durability of operational reliability; temperature resistance: Pass
Durability of operational reliability; vibration resistance: Pass
Durability of operational reliability; electrical stability: Pass
Durability of operational reliability; humidity resistance: Pass

User Documentation:
This document

Tyco Fire & Security GmbH,
Victor von Bruns-Strasse 21,
8212 Neuhausen am Rheinfall,
Switzerland
15
2831-CPR-F0534
21
0832-UKCA-CPR-F0344
DoP-2015-4144

EN 54-4: 1997 + A1: 2002 + A2: 2006
Power supply equipment for fire detection and fire alarm systems for buildings
PSU A38

Essential Characteristics
EN54-4: 1997
Performance of power supply: Pass
Operational reliability: Pass
Durability of operational reliability; temperature resistance: Pass
Durability of operational reliability; vibration resistance: Pass
Durability of operational reliability; electrical stability: Pass
Durability of operational reliability; humidity resistance: Pass

User Documentation:
This document

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www.fireclass.net
Tyco Fire & Security GmbH, Victor von Bruns-Strasse 21, 8212 Neuhausen am Rheinfall, Switzerland