CHAPTER 2

DESIGN AND CHARACTERISTICS

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CONTENTS

1 Design and Function

The new, air-cooled Transmitter Family NW820x is designed for transmitting digital TV signals in the IV and V frequency bands (UHF). The digital standards DVB-T, ATSC, DMB-T and MediaFLO can be transmitted.

LDMOS transistor-based amplifiers ensure high output power while requiring only minimum space. For digital TV, output power of 325 W to 1.95 kW is available.

Both the power class of the transmitter and its type designation depend on the number of built-in amplifiers.

Name	Number of amplifiers	Power
NW8201	1	325 W
NW8202	2	650 W
NW8203	3	975 W
NW8204	4	1.3 kW
NW8205	5	1.625 kW
NW8206	6	1.95 kW

This chapter describes the transmitter's design and the functions of its components.

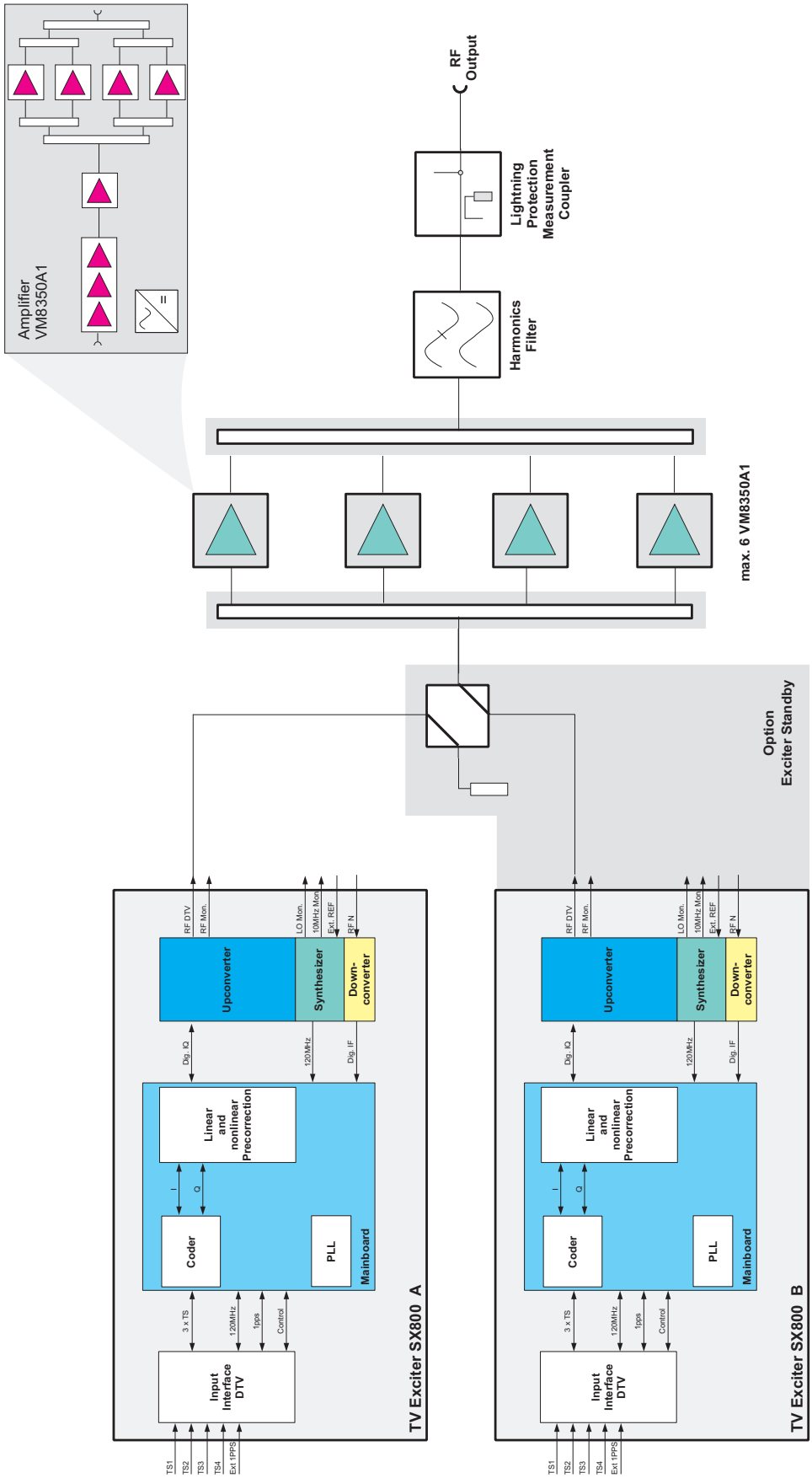

Fig. 1 *Block diagram of DTV transmitters: In this example NW8204E/V*

Fig. 2 *Transmitter NW8202 modules*

1) Connection panel
2) Exciter
3) Transmitter control unit
4) Output stage
5) Power distribution
6) RF connector
7) Test lightning protection system
8) Splitter/combiner unit
9) Harmonics filter
10) Intake box (fan)

The NW8202 consists of the following units and modules:

- Power distribution
  - Main switch
  - Motor protection switch
  - Automatic line fuse
  - Power distribution board
  - Auxiliary power supply
  - Optional socket
  - Grounding bolt
- Transmitter control unit components
  - NETCCU®
  - Rack controller
- Connection panel
- Exciter unit
  - Exciters (1 or 2)
  - Exciter switch (in case of standby exciter)
- Output stage unit
  - Splitter
  - Amplifiers (1 to 6)
  - Combiner
  - Absorber
- Harmonics filter
- Test lightning protection system
  - Lightning protection
  - Directional coupler
  - Test interface
- RF Connector
- Cooling system
  - Air intake and exhaust duct
  - Fans (2)
  - Starting capacitor (2)
  - Differential pressure gages (2)
  - Temperature sensors (2)
- Transformer (optional)

1.1 Power Distribution

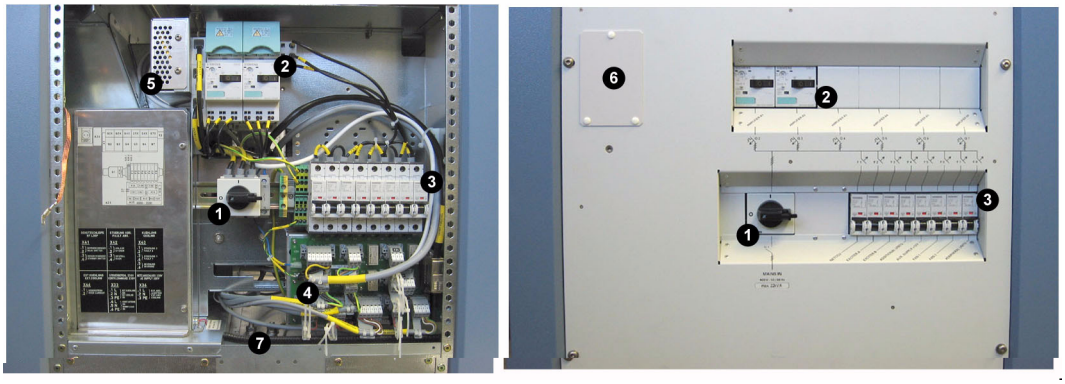

Fig. 3 *Power distribution*

1) Main switch (power supply terminal)
2) Motor protection switch
3) Automatic line fuse
4) Power distribution board
5) Auxiliary power supply
6) Optional socket
7) Grounding bolt

The power distribution is designed for max. 32 A and contains the following components:

- Main switch (power supply terminal)
- Motor protection switch
- Automatic line fuse
- Power distribution board
- Auxiliary power supply
- Optional socket
- Grounding Bolt

1.1.1 Main Switch (Power Supply Terminal)

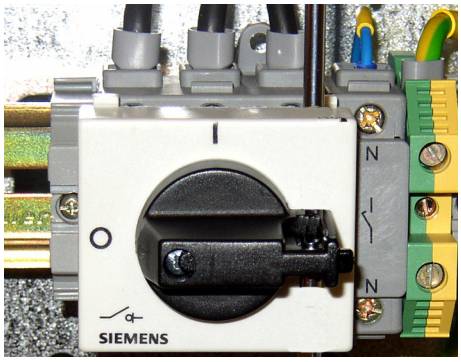

Fig. 4 *Main switch*

The main switch fully disconnects the transmitter rack from the AC power supply. It is connected to three-phase alternating current and a neutral conductor.

Note *The main switch can be equipped with a padlock to prevent unauthorized persons from switching it off and on.*

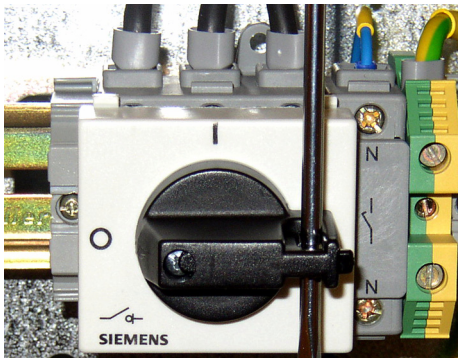

Fig. 5 *Main switch with fuse*

1.1.2 Motor Protection Switch

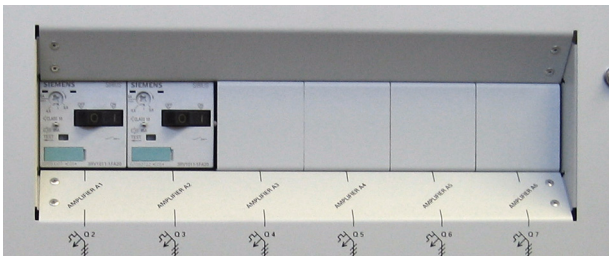

Fig. 6 *Motor protection switches*

The motor protection switches are used to switch amplifiers on and off, as well as to protect the subsequent supply cables and amplifiers from overloading. As shipped from the factory, the number of motor protection switches matches the number of built-in amplifiers. The arrangement of amplifiers and motor protection switches is shown on the front panel.

The thermally activated overcurrent release of the motor protection switches is factory-set.

1.1.3 Automatic Line Fuse

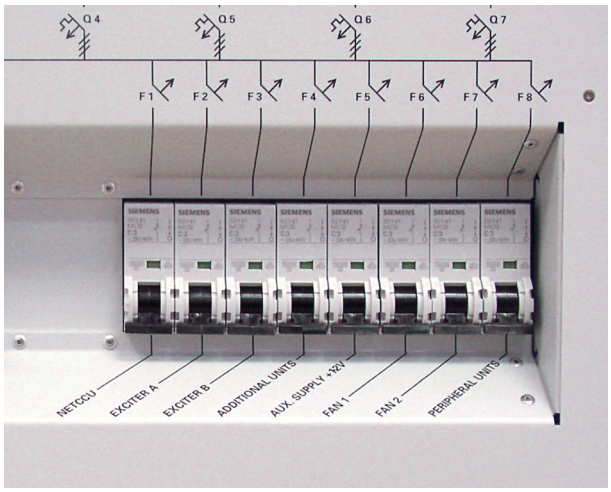

Fig. 7 *Automatic line fuses*

The automatic line fuses are used to protect the power lines, e.g. in the event of a short-circuit and when the following equipment is switched on and off:

- NetCCU® (F1)
- EXCITER A/B (F2/F3)
- Optional add-on equipment (F4)
- Auxiliary power supply (F5)
- Fan (F6/F7)
- Controller (F8)
  - External cooling system
  - Controller for dummy antennas
  - Optional external fan

The arrangement of the equipment and the automatic line fuses is shown on the cover.

1.1.4 Power Distribution Board

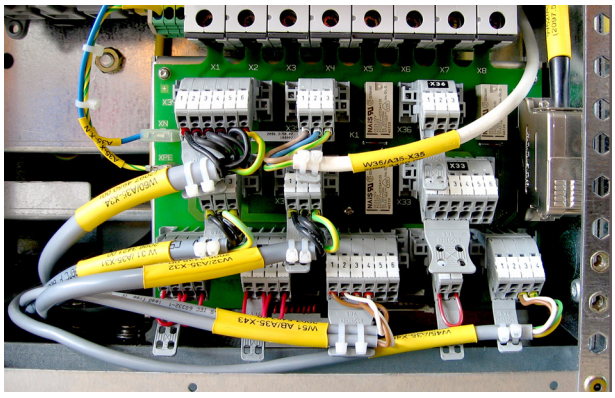

Fig. 8 *Power distribution board*

The power distribution board is directly connected to the overcurrent protector switches and contains permanently-wired transmitter-internal cables and transmitter-external components (customer-interfaces) to which external equipment can be connected.

Note *The appropriate unequipped connectors are part of the transmitter and are located at the assigned positions.*

The following equipment is or can be connected to the power distribution board:

- NETCCU®
- EXCITER A/B
- Fan
- External fan (switched phase for controlling an external contactor)
- External dummy antenna (switched phase for controlling an external contactor)
- RF carrier loop
- External RF absorber fault (system absorber)
- Overcurrent (external cooling)
- Connector for rack controller

1.1.5 Auxiliary Power Supply

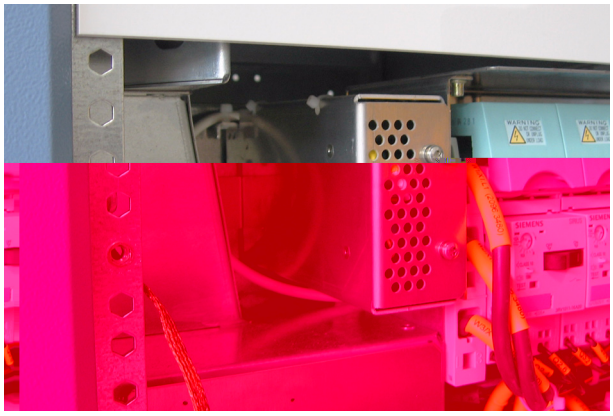

Fig. 9 *Auxiliary power supply*

The primary task of the auxiliary power supply (+12 V) is to provide power to the additional control components in the rack. The required redundancy of this auxiliary voltage is generated via the exciters, which also output a +12 V current.

The following modules are powered by the auxiliary power supply:

- Rack controller
- CANBUS interface of the amplifiers
- Switching relay in the power distribution
- RF rectifier/test directional coupler when the standby transmitter is active