LANDIS & STAEFA

7873

ISO 9001

Electronic Air / Fuel Ratio Control

RVW26...

Electronic control unit
– for use with modulating single- or dual-fuel burners with variable speed fans
– with enhanced functionality for mechanical air / fuel ratio control
– as an ancillary unit to the RVW25..., which must always be used together with the RVW26...

The RVW26... are tested and certified to EN 298. They carry the CE mark in compliance with the directives for gas-fired appliances and electromagnetic compatibility.

The RVW26... and this data sheet are intended for OEMs which integrate the control unit in their products.

Use

- Modulating single- or two-fuel burners
- Two-channel extension to RVW25... (also refer to data sheet 7872)
- Suited for use with oxygen trim control RPO25...
- Optimum and efficient burner operation

Mechanical design

RVW26...

- Unit of plug-in design with
  - European standard printed circuit boards
  - two 32-pin DIN connectors
  - exchangeable relay board for the control of the actuators
- The RVW26... is supplied without housing

Located on the front of the unit are:
– LED 1 for fuel 1
– LED 2 for fuel 2
– A seven-segment display (three digits) for the operating phases and fault indication

Housing ARG61.0X0

- Made of impact-proof plastic
- With transparent cover. Under the front plate are:
  - a jack for the handheld terminal AZW20.20
  - an operating mode selector «PROG / RUN»
- **Must** be ordered as a separate item (refer to «Ordering»)

Warning notes

The following warning notes must be observed to avoid personal injury and damage to property or the environment!

- The control unit may not be opened, interfered with or modified!
- Risk of electric shock hazard!
  – The RVW26... must be completely isolated from the mains network before performing any wiring changes on the unit!
  – Protection against electric shock hazard on the RVW26... is ensured **only** when the unit is adequately mounted and the electrical connections are properly made!
  – To warrant protection against electric shock hazard, AC 230 V mains voltage must be strictly separated from extra low voltage!
- Risk of explosion!
  – Check wiring and all safety functions!

Engineering notes

- Check the electromagnetic compatibility with adjacent components!
- The RVW26... must be used in connection with the RVW25... and the associated components!
- For additional information, especially on commissioning, refer to Basic Documentation P7872 and P7873, and data sheet 7872!

Mounting notes

- Observe the relevant national safety regulations!
- After putting the unit into operation, check the flue gas values!
- The RVW26...is designed for
  – flush panel mounting in connection with the housing ARG61.010
  – wall mounting in connection with the housing ARG61.040
    ⇒ Mounting of screw terminal base
    - terminal 32 at the top
    - terminal 2 at the bottom
    - wiring in compliance with the plant connection diagram

Installation notes

- Installation and commissioning work may **only** be carried out by qualified personnel!
- Observe permissible length and shielding of detector cables!
  ⇒ Refer to «Technical data»
- Ignition cables must always be run separately, maintaining the greatest possible distance to the unit and other cables!
- Before putting the unit into operation, check wiring carefully!

Ordering

RVW26...	**Air / fuel ratio control** – With data storage module RZD20 plugged in	**RVW26.000A27**
Housing	For flush panel mounting, complete with connection terminals and cover	**ARG61.010**
	For wall mounting, complete with connection terminals and cover	**ARG61.040**
Accessories	**Handheld terminal,** incl. cable KF8859 (L = 2 m) – For programming – For detecting faults – For rectification of faults	**AZW20.20**
	Separate cable for use with the handheld terminal (L = 20 m)	**KF8860**
	Data storage module	**RZD20**
	Relay board – Exchangeable – Plug-in design	**4 668 9913 0**
	Conductive plastic potentiometers for actuators (refer to data sheet 7921)	
	– 1 kΩ / 90° single potentiometer	**ASZ12.803**
	– 1 kΩ / 135° single potentiometer	**ASZ12.833**
	– 1 kΩ / 90° double potentiometer	**ASZ22.803**
	– 1 kΩ / 135° double potentiometer	**ASZ22.833**

Technical data

Operating voltage	AC 230 V ±15 %
Mains frequency	50 Hz ±6 %
Power consumption	25 VA
Plug-in system	design D to DIN 41612
Dimensions of RVW26... board	100 x 160 mm

Degree of protection of housing

- Front	IP 42, IEC 529
- Base	IP 10, IEC 529

Environmental conditions

Transport	**IEC 721-3-2**
Climatic conditions	class 2K2
Temperature range	-40...+60 °C
Humidity	< 95 % r.h.
Mechanical conditions	class 2M2
Operation	**IEC 721-3-3**
Climatic conditions	class 3K5
Temperature range	-20...+60 °C
Humidity	< 95 % r.h.

Condensation, formation of ice and ingress of water are not permitted!

Switching capacity of terminals L-Q1

- Voltage	AC 230 V ±15 %
- Current	0.005...2 A

Switching capacity of terminals Q4-Q5 / H

- Voltage	AC 24...265 V
- Current at AC 230 V	0.005...2A
- Current at AC 24 V	0.02...2A

Extra low voltage inputs

- Hum voltage	max. AC 50 mV

Terminals B2...B4 and U1

- Voltage	DC 0...10 V
- Impedance	≥ 100 kΩ

Terminal TxD

RS-232 level, 9600 Baud, 8 data bit, 1 stop bit,
- no parity bit

Perm. actuator running time	30...60 s

Potentiometer (conductive plastic)

- Resistance	1 kΩ
- Angular rotation	90...135°

- Refer to «Ordering»

Connection terminals for	2 x 1.5 mm²
or	1 x 2.5 mm²
Mounting orientation	optional
Safety class	II to IEC 730-1

Weight

- With housing	1.4 kg
- Without housing	0.75 kg

CE conformity

According to the directives of the European Union
Electromagnetic compatibility EMC
89/336 EWG incl. 92/31 EEC
Directive for gas-fired appliances 90/396 EEC
(level to EN 298)

Positioning signal X3

- Voltage	DC 0...10 V
- Internal resistance	470 Ω

Switching capacity of control outputs Y3...Y6, Y8

- Voltage	AC 230 V ±15 %
- Current	max. 5...150 mA eff.
- Number of switching cycles at	
cos φ = 0.6	: 13 x 10^6
cos φ = 0.8	: 18.8 x 10^6
cos φ = 1	: 20 x 10^6

Terminals +5 V

- Loading	≤ 1 mA

Extra low voltage outputs, terminal U10

- Voltage	DC 10 V
- Current (all terminals)	max. 50 mA

Terminals X2, U3

- Voltage	DC 0...10 V
- Impedance	25 kΩ

Control inputs Q2, Q3, Y10, Y20; F1; F2

- Voltage on	AC 187...265 V
- Voltage off	< AC 50 V
- Current on	< 1 mA

Load signal X1

- Voltage	DC 0...10 V
- Internal resistance	100 Ω

Functions

General

- RVW25... and RVW26... together are a master-slave system
- The RVW25... controls the ancillary unit RVW26...
- The RVW26...
  - must always be used together with the RVW25...!
  - checks the positions of two additional actuators
    ⇒ in function of programmable curves for each type of fuel
  - synchronously controls the actuators or the fan speed of the RVW25...

Programming

- With the help of the handheld terminal AZW20.20 (must be ordered as a separate item)
  - Programming of setpoint curves
  - Setting of additional plant parameters
- Operating mode selector on the RVW26... must be set to PROG
- Two channels
  - for two actuators
  - Each with two setpoint curves with a maximum of 17 breakpoints
- Programmable and stored in non-volatile memory:
  - The ignition position
  - The load-specific operating positions
  - Other parameters required for control
- Using the data storage module RZD20, the values can be transferred to other RVW26...

Supervision and display

- In the case of inadmissible operational statuses or system faults, the burner will be shut down
- During startup and shutdown, the RVW26... displays operating phase 0...9
- Faults are indicated by a flashing two-digit code

Startup

- Burner startup is controlled by the burner control
- The RVW26...
  - identifies the startup sequence during startup based on valve and fan control; actuators are controlled accordingly
  - monitors the proper functioning of the connected components during startup
  - assumes the programmed ignition position for startup
  - assumes the programmed low-flame position after the start of the burner

Control operation

- When the operating position is reached, the burner control releases the load controller
- The load controller controls the burner's output with the help of the RVW25... and RVW26...
- The RVW26... controls its actuators according to the programmed curves and the setpoint signal received from the RVW25... (DC 0...10 V)

Shutdown

- The RVW26... drives the actuators to their start positions
  - after the burner has shut down
  - on completion of a possible post-purge time

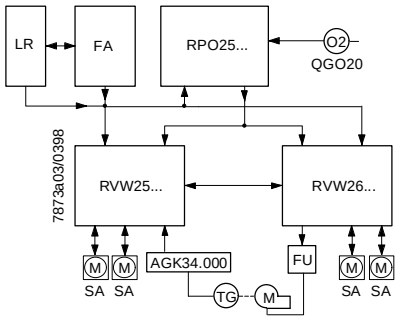
Correcting signal

- Variations of combustion parameters (e.g. air density or quality of fuel)
  - can be compensated by feeding the signal from oxygen trim control RPO25... to the correcting signal input
  - the authority of the correcting variable can be programmed

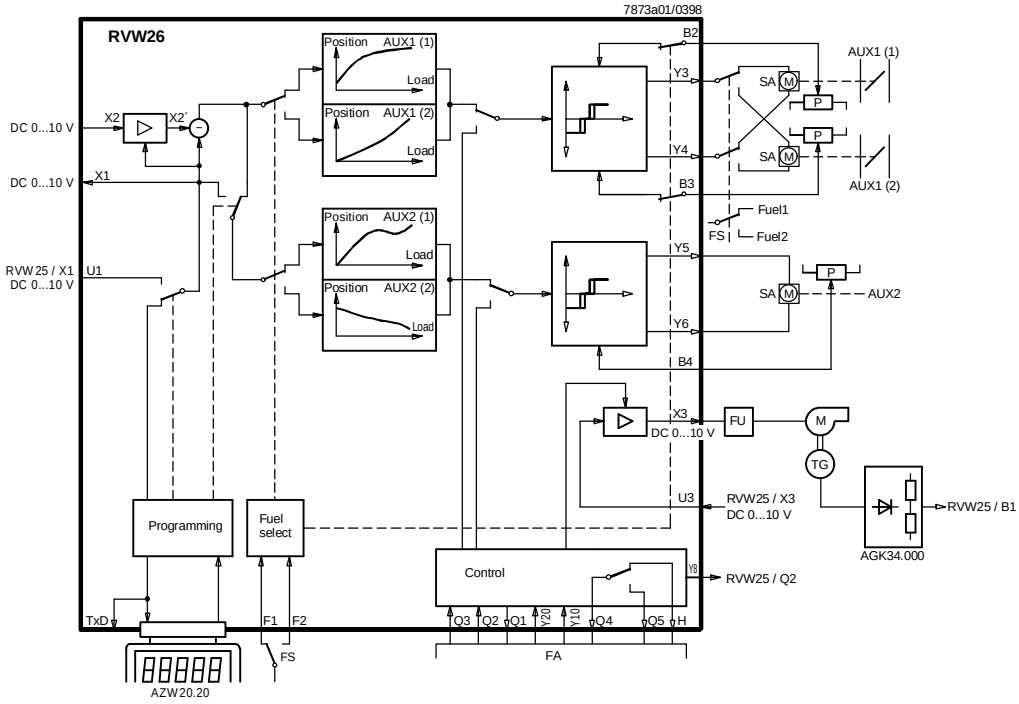
Compensation of hysteresis

- The RVW26... offsets the mechanical play between actuator and regulating device
- The extent of compensation can be programmed

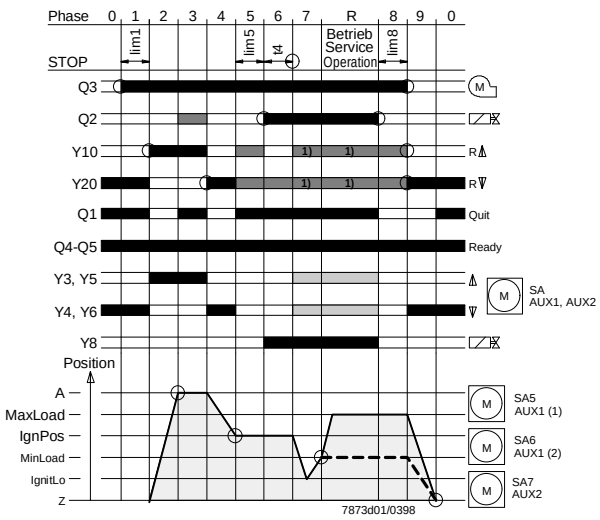
Function diagram RVW26... with RVW25...



Basic diagram RVW26...



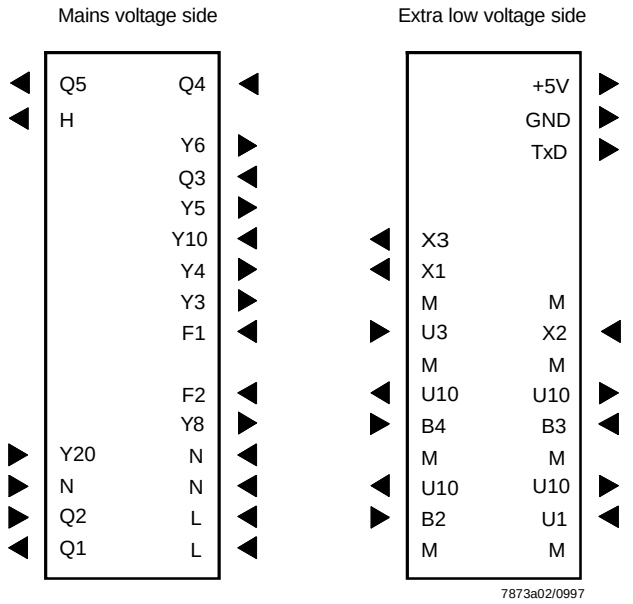
Sequence diagram



Legend

■	Signal must be present or output is active
□	Signal may not be present or output is inactive
▒	Signal can be present
▒	Output controlled
○	Prerequisite for changing to the next phase
Q...Y	For terminal markings, refer to «Connection diagram»
Phase	Program phase
AUX1...	Setpoint curves for auxiliary actuator 1
AUX2...	Setpoint curves for auxiliary actuator 2
AZW…	Handheld terminal
FA	Burner control
FU	Speed controller
lim...	Duration of phase is limited. If, on completion of the preset period of time, the sequence does not change, the unit will initiate lockout
lim1	30 s
lim5	75 s
lim8	300 s
1)	RVW26... controls the actuators according to the load signal U1
FS	Fuel selector
Fuel...	Setpoint curves for fuel actuator
LR	Load controller
M	Fan
SA	Actuators
t4	Interval
TG	Tachogenerator

Connection terminals



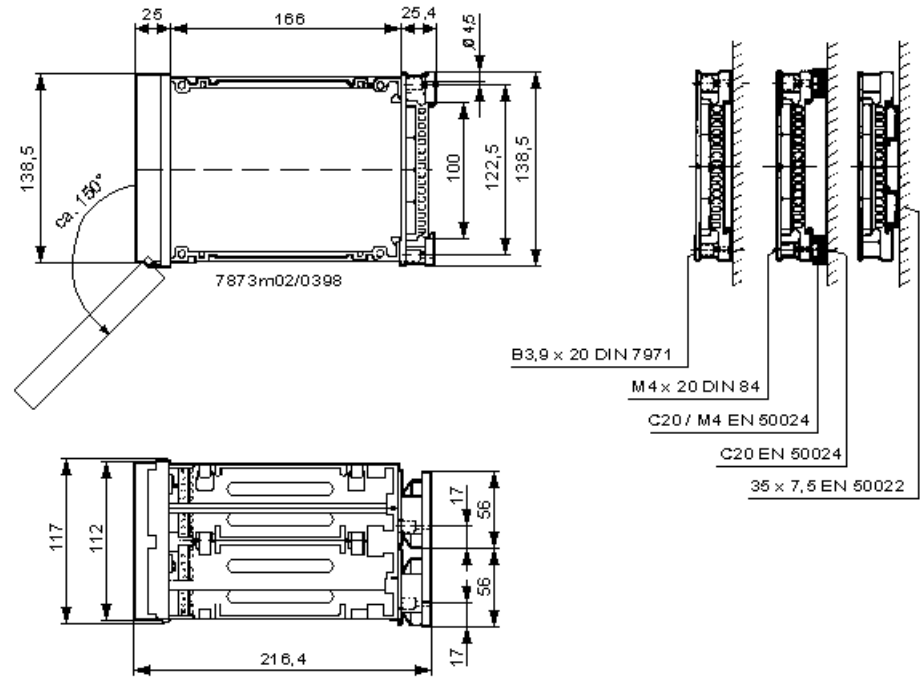
Legend

Terminal	Input / output	Voltage	Description
B2	I	DC 0...10 V	Potentiometer (wiper) from auxiliary actuator (AUX1(1))
B3	I	DC 0...10 V	Potentiometer (wiper) from auxiliary actuator (AUX1(2))
B4	I	DC 0...10 V	Potentiometer (wiper) from auxiliary actuator (AUX2)
F1	I	AC 230 V	Fuel selection: fuel 1
F2	I	AC 230 V	Fuel selection: fuel 2
L	I	AC 230 V	Live for internal power supply, actuator outputs and Q1
N	I	—	Neutral for internal power supply, reference potential for mains voltage inputs (all N-terminals are **internally** interconnected)
M	—	—	Reference potential for all extra low voltage inputs / outputs and for shielding (all M-terminals are **internally** interconnected)
Q1	O	AC 230 V	Acknowledge signal: indicates when certain actuator positions are reached
Q2	I	AC 230 V	Signal from burner control: first fuel valve on / off
Q3	I	AC 230 V	Signal from burner control: fan on / off
Q4-Q5 / H	O	potential-free	Readiness contact / control loop: indicates when the RVW26... is ready to operate
TxD	O	—	Output RS-232
GND	—	—	Reference potential for RS-232 output
U1	I	DC 0...10 V	Signal input for analog burner load control
U3	I	DC 0...10 V	Readiness contact / control loop: RVW25...
U10	O	DC 10 V	Power supply for the potentiometers (all U10 terminals are **internally** interconnected)
X1	O	DC 0...10 V	Burner load signal
X2	I	DC 0...10 V	Correcting signal from oxygen trim control RPO25...
X3	O	DC 0...10 V	Control signal for speed controller
Y3	O	AC 230 V	Positioning signal (open) for actuator AUX1
Y4	O	AC 230 V	Positioning signal (close) for actuator AUX1
Y5	O	AC 230 V	Positioning signal (open) for actuator AUX2
Y6	O	AC 230 V	Positioning signal (close) for actuator AUX2
Y8	O	AC 230 V	Control signal for RVW25...: valve on / off
Y10	I	AC 230 V	Positioning signal for pre-purge from burner control
Y20	I	AC 230 V	Positioning signal for ignition position and the «closed» position from the burner control
+5V	O	DC 5 V	Auxiliary voltage, max. 1 mA

Dimensions

Dimensions in mm

Housing for wall mounting ARG61.040



Housing for flush panel mounting AGG61.010