

SIEMENS



RWF10...

Compact Universal Controller



0970265-7B

Specifications

Power supply voltage:	85 to 265 VAC 50/60 Hz
Power Consumption:	Approx 8.5 VA
Indication Accuracy:	+/- 0.1% of Displayed Value
Control Output 1 (OUT1):	4-20mA DC 600 Ohm Max Load
SUB1 & SUB2 Contacts:	250 VAC Max, 3A Resistive Life - 100,000 operations
Ambient Temp. range Operation:	14 to 131 F (-10 to 55 C)
Storage:	-13 to 149 F (-25 to 65 C)
Ambient Humidity:	85% Max (avoid freezing or condensation)
Weight:	Approx 0.35 lb (150g)
Protection:	Front Panel: NEMA 4 (IP 66) Rear Case: NEMA1 (IP 20)
Memory:	EEPROM 1,000,000 max write operations

CAUTION

- Do not touch the terminals while power is being supplied.
- Do not allow metal pieces of any type to enter the product.
- Do not use the product where subject to flammable vapors.
- Never attempt to repair or modify the product.
- Tighten the terminal screws to 0.90 Nm (8 in * lb)
- More than one disconnect switch may be required to de-energize equipment.
- Set the parameters of the product so that they are suitable for the system being controlled.
- If the output relays are used past their life expectancy contact fusing or burning may occur. Always consider the application conditions and use the output relays within their rated load and life expectancy.
- A malfunction of the product may make control operations impossible or prevent alarm outputs resulting in property damage. To maintain safety in the even of a malfunction, take appropriate safety measures.

SUITABILITY FOR USE

- Siemens shall not be responsible for conformity with any standards, codes or regulations that apply to the combination of the products in the customers application or use of the product.
- NEVER use the products for an application involving serious risk to life or property without insuring that the system as a whole has been designed to address the risks, and that the Siemens product is properly rated and installed for the intended use within the overall equipment or system.

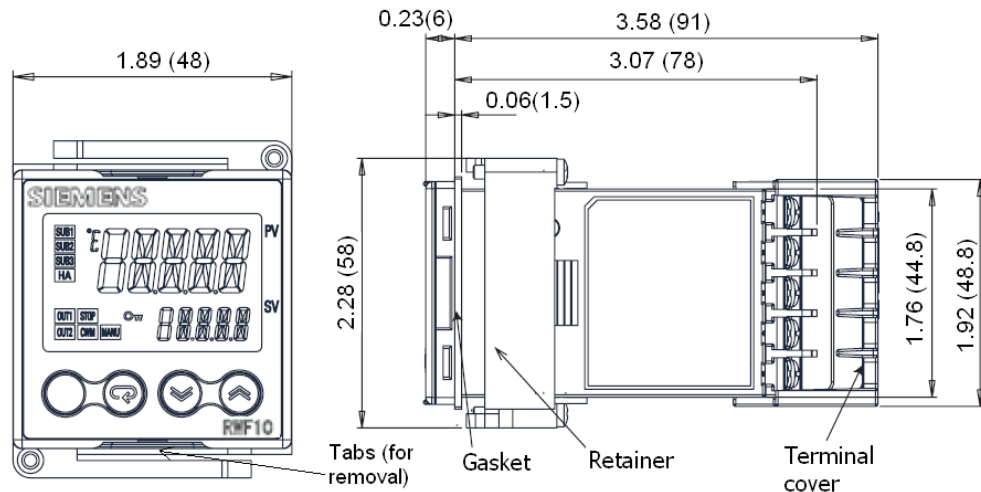
PRECAUTIONS FOR SAFE USE

1. Do not subject the product to the following:
 - Corrosive gasses or dust
 - Intense temperature changes
 - Icing and condensation
2. Use / Store within prescribed temperature ranges
3. Allow heat to escape. Do not block ventilation holes on the product.
4. Use proper size crimp terminals for wiring.
5. Allow as much space as possible between the controller. and high current / voltage devices.
6. Use this product within the rated load and power supply.
7. A switch or circuit breaker should be provided close to the controller.
8. Always turn off the power supply before pulling out the interior of the product.
9. Only use standard grade alcohol to clean the face of the product.
10. Control outputs may turn off when shifting between certain setting levels. Take this into consideration when shifting between setting levels.

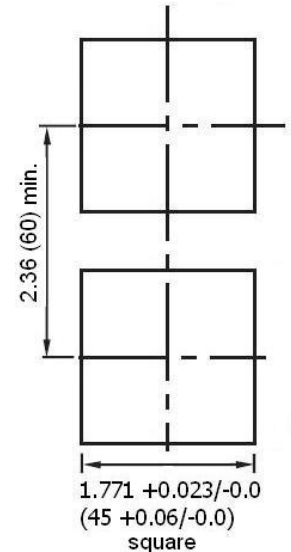
CONFORMANCE TO EC DIRECTIVES

For earthing, selection of cable any other conductions for EMC compliance, please refer to the manual or the instruction manual for installation.
This is a class A product. In residential areas, it may cause radio interference in which case the user may be required to take adequate measures to reduce interference.

Dimensions – in (mm)



Enclosure Cut Out – in (mm)



The RWF10 can be removed from its base by gently prying with a small screwdriver on the plastic tabs located on the top and bottom of the RWF10's face. Thus, the unit can be easily replaced without having to remove all of the wires from the base. The RWF10 should be packaged with: 1 gasket, 1 retainer and 1 terminal cover.

Identification of Front Panel

Temperature unit indicator
(Lit if a temp sensor is selected)

Status of SUB1 contact (Lit = closed)

Status of SUB2 contact (Lit = closed)

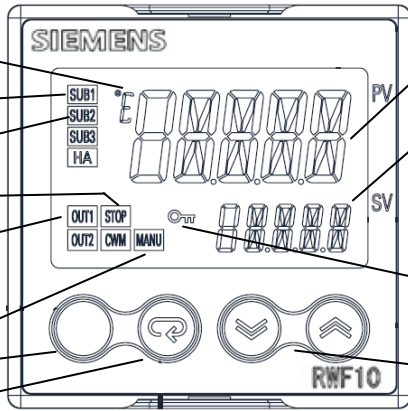
Run / Stop indicator (Lit = stop mode)
Stop mode = analog out 1 to min. sig.

Analog output 1 indicator
(Lit = analog out 1 greater than min signal)

Auto / Manual Indicator (Lit = manual)

Level Key

Mode Key



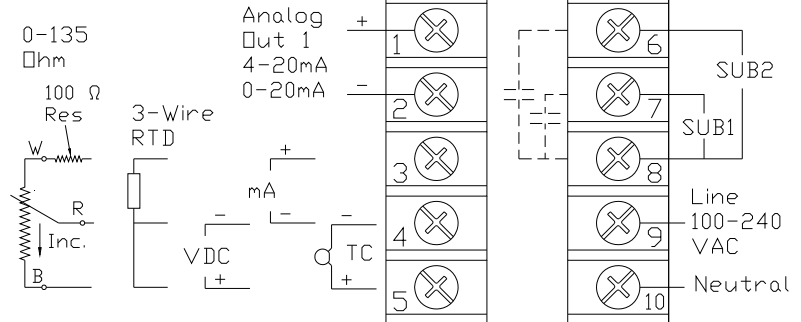
Display # 1
Process Value or Parameter Symbol

Display # 2
Setpoint or Parameter Value

Protection Indicator
(Lit = Up and down keys disabled)
Params. & Setpoint cannot be changed
See Parameter WitPt

Up & Down Arrow Keys
Used to change values in # 2 display
Used to change setpoint when displayed.

Connections

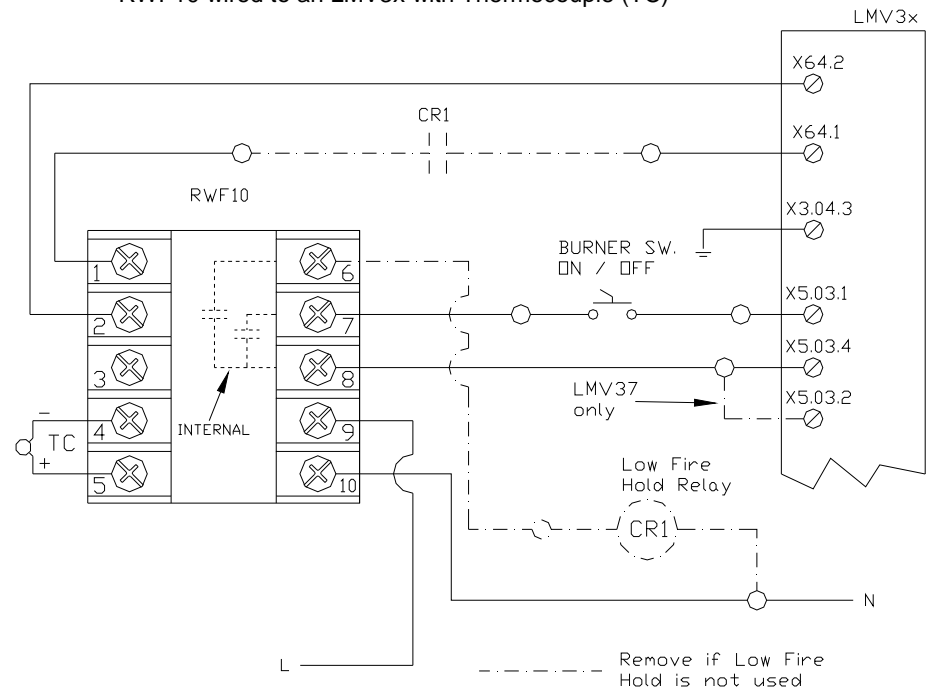
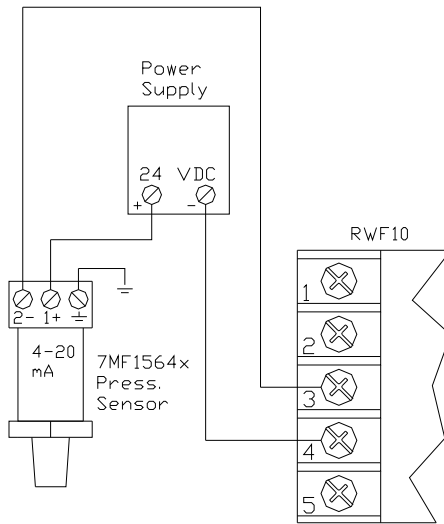
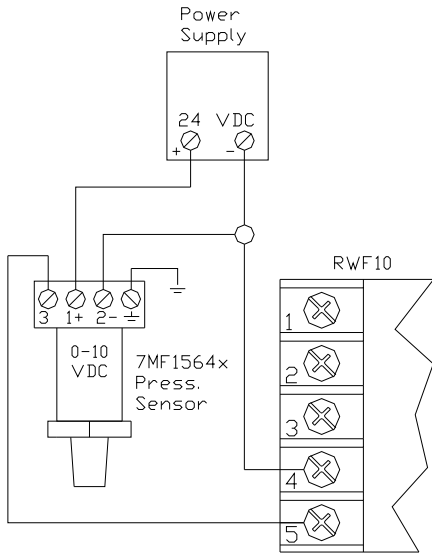


Typical RWF10 Wiring

0-10 VDC Pressure Transducer

4-20mA Pressure Transducer

RWF10 wired to an LMV3x with Thermocouple (TC)



Parameters (Settings)

INITIAL SETTING LEVEL			
TO ENTER : When displaying PV / SP (Process Variable / Setpoint), Hold down level key for 3 sec. Control will stop, relay contacts will de-energize.			
TO EXIT : Hold down level key for at least 1 second. Note : Control will run, contacts may re-energize.			
TO SCROLL : Press mode key. TO CHANGE VALUES : Press or hold up / down keys.			
Symbol	Description	Default	Max Range
CN-t	Sets the type of sensor to be used. Common Sensors : 1 = PT100 3 wire RTD, 5 = K type Thermocouple (TC), 8 = J type TC, 25 = 4-20mA, 29 = 0-10VDC. Other sensor types available. This setting will effect settings having a #.	8	0 to 29
* CN-H	Scales the analog input. If 25 or 29 are selected (analog inputs) this sets the high range and low range respectively. Does not appear for temperature sensors. The decimal place "dP" effects these settings. Example : If a 0-150 PSIG pressure sensor were to have one decimal place on the display, CN-H would be set to 1500 and CN-L would be set to 0. If the same pressure sensor were to have two decimal places, CN-H would be set to 15000 and CN-L to 0. No decimal places, CN-H would be set to 150 and CN-L to 0.	150	-19999 to 32400
* CN-L		0	-19999 to 32400
# dP	Sets the number of decimal places. Select from 0 to 3. This does not appear for temperature sensors. If greater than 0, settings having a * will be effected.	0	0 to 3
d-U	Sets the units for temperature. Select C or F. Does not appear if the analog input is used.	F	C or F
# * SL-H	Upper set point limit. Range varies according to setting of lower set point limit and selection of sensor.	200	Varies
# * SL-L	Lower set point limit. Range varies according to setting of upper set point limit and selection of sensor.	0	Varies
ENtL	Defines the type of control. Select PID for a modulating PID control, or ON / OFF for a simple on / off controller.	PID	PID or ON/OFF
S-HC	Defines the type of control. Select "STnd" for boiler / burner applications. H-C is used for heat / cool appliances.	STnd	STnd or H-C
oREV	Determines whether the control is direct or reverse acting. Select "oR-R" (reverse) for heating applications	oR-R	oR-R or oR-d
ALt1	Type of alarm for Alarm 1 (SUB 1 Contact, Terminal 7 and 8). Typically set to type 3 for cycling boiler / burners.	3	0 to 15
# ALH1	Determines the Hysteresis for Alarm 1 (SUB 1 Contact). This is in absolute units (degrees C or F) for temperature sensors, and a percentage of span for analog inputs. For further explanation, see Fig.1	10	0 to 32400
ALt2	Type of alarm for Alarm 2 (SUB 2 Contact, Terminal 6 and 8). Typically set to type 8 for low fire hold, see Fig.2	8	0 to 15
# ALH2	Determines the Hysteresis for Alarm 2 (SUB 2 Contact). This is in absolute units (degrees C or F) for temperature sensors, and a percentage of span for analog inputs. For further explanation, see Fig.2	2	0 to 32400
tR-t	Transfer output type. This can be used to convert one type of analog signal to a different type of analog signal. For boilers, it is typically used to convert a 0-135 ohm signal to a 4-20mA signal. To do this, set this parameter to PV, set CN-t = 0, set d-U = C. Note: See connections diagram.	Off	N/A
tR-H	Transfer output upper limit. If "tR-t" is set to off, this will not appear. For converting a 0-135 ohm signal to 4-20mA, the setting is approximately 382. For converting a 0-135 ohm to 20-4mA (reversed) setting is approximately -1.	900	-199.9 to 900
tR-L	Transfer output lower limit. If "tR-t" is set to off, this will not appear. For converting a 0-135 ohm signal to 4-20mA, the setting is approximately -1. For converting a 0-135 ohm to 20-4mA (reversed) setting is approximately 382.	-199.9	-199.9 to 900
oI-t	Configures the analog output (firing rate signal). Typically set to 4-20mA.	4-20	4-20 or 0-20
# SQR	Square root extraction for use with flow sensors. Only appears when a analog input is selected.	Off	On or Off

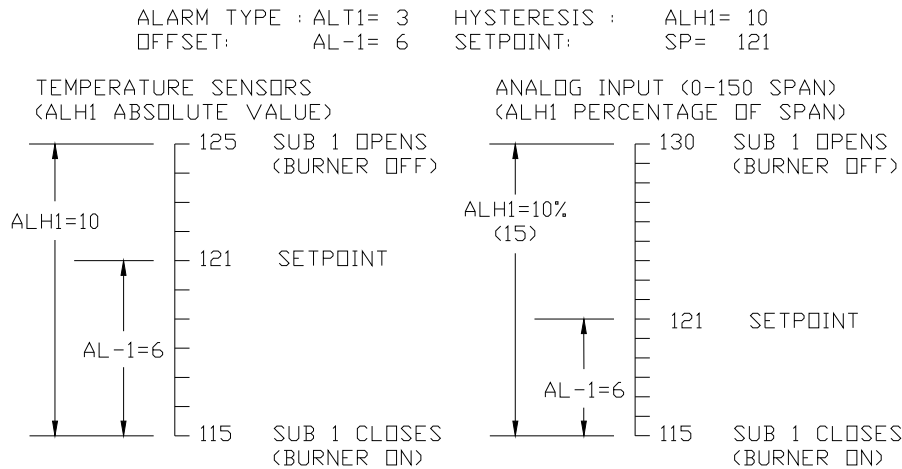
Parameters (Settings)

ADJUSTMENT LEVEL			
TO ENTER : When displaying PV / SP (Process Variable / Setpoint) Values, press level key for less than 1 sec. "L.AdJ" will appear. Press mode key for less than 1 sec. TO EXIT : Press level key for less than 1 sec repeatedly until PV / SP are visible. TO SCROLL : Press mode key. TO CHANGE VALUES: Press or hold up / down keys.			
Symbol	Description	Default	Max Range
<i>AT</i>	Auto tune. If "AT-2" is selected, control auto-tunes at 100 % output. If "AT-1" is selected, control auto-tunes at 40% output. Engage auto-tune when burner is fired and is modulating (after cold start has released)	Off	Off, AT-1 AT-2
<i>INS</i>	Compensates for bias errors on the temperature or pressure input.	0	324 to -199
<i>P</i>	Proportional band part of PID loop. Creates a proportional response to deviations from setpoint. Example: Setpoint = 100, P = 8, I=0, D = 0. At 100, output = 4mA, at 96 output = 12mA, at or below 92 output = 20mA.	8	0.1 to 3240
<i>I</i>	Integral or Reset part of PID loop. Corrects for steady state differences from setpoint using integration. A smaller number increases the number of integrations, and causing more integral action. 0 deactivates feature.	233	0.0 to 3240
<i>D</i>	Derivative part of PID loop. Anticipates and corrects for dynamic process changes by analyzing rate of change (slope). A larger number increases the amount of derivative action. Typically set anywhere from 1/4th to 1/6th of the Integral. Typically deactivated (d = 0) for highly dynamic (rapidly changing) processes.	40	0.0 to 3240
<i>OL-H</i>	Limits the maximum output signal (high fire). Example : If set to 80% with a 4-20mA output signal, the maximum signal the controller will output is 16.8 mA.	105	low limit + 0.1 to 105
<i>OL-L</i>	Limits the minimum output signal (low fire). Example : If set to 20% with a 4-20mA output signal, the minimum signal the controller will output is 7.2 mA.	-5	-5 to high limit -0.1
<i>ORL</i>	Limits the rate of change of the output signal. Units are % per second. 0 deactivates the limit. Example: if set to 1% per second, ramping from 0% to 100% = 100 seconds. If set to 2%, ramping from 0% to 100% = 50 sec	0	0 to 100
OPERATION LEVEL			
TO ENTER : When displaying PV / SP (Process Variable / Setpoint) Values, press mode key. TO EXIT : Press mode key until PV / SP (Process Variable / Setpoint) appears again. TO SCROLL : Press mode key. TO CHANGE VALUES: Press or hold up / down keys.			
Symbol	Description	Default	Max Range
<i>A-M</i>	Auto-Manual switchover. If the level key is pressed for 3 seconds once A-M is displayed, the controller will go into manual mode. The lower (green) number displays the % controller output. Note: If tR-1 is set to anything other than OFF, manual mode will not function.	Auto	Auto, Manual
<i>R-S</i>	Run-Stop Switch. If controller is in stop mode, control will output a minimum signal (4mA if config. for 4-20mA output). The digital (relay) outputs are not affected by stop mode. Can be used as a manual low fire hold.	Run	Run, Stop
<i>#*AL-1</i>	Value for Alarm 1 (SUB 1 Contact). SUB 1 contact is typically used to cycle the burner. This number always is in absolute units and does not change to a percentage of sensor span. For further explanation, see Fig.1	5	-19999 to 9999
<i>#*AL-2</i>	Value for Alarm 2 (SUB 2 Contact). SUB 2 Contact is typically use for a low fire hold. This number always is in absolute units and does not change to a percentage of sensor span. For further explanation, see Fig.2	100	-19999 to 9999

Parameters (Settings)

OPERATION LEVEL			
TO ENTER : When displaying PV / SP (Process Variable / Setpoint) Values, press mode key. TO EXIT : Press mode key until PV / SP (Process Variable / Setpoint) appears again. TO SCROLL : Press mode key. TO CHANGE VALUES: Press or hold up / down keys.			
Symbol	Description	Default	Max Range
R-M	Auto-Manual switchover. If the level key is pressed for 3 seconds once A-M is displayed, the controller will go into manual mode. The lower (green) number displays the % controller output. Note: If tR-t is set to anything other than OFF, manual mode will not function.	Auto	Auto, Manual
R-S	Run-Stop Switch. If controller is in stop mode, control will output a minimum signal (4mA if config. for 4-20mA output). The digital (relay) outputs are not affected by stop mode. Can be used as a manual low fire hold.	Run	Run, Stop
#*RL-1	Value for Alarm 1 (SUB 1 Contact). SUB 1 contact is typically used to cycle the burner. This number always is in absolute units and does not change to a percentage of sensor span. For further explanation, see Fig.1	5	-19999 to 9999
#*RL-2	Value for Alarm 2 (SUB 2 Contact). SUB 2 Contact is typically use for a low fire hold. This number always is in absolute units and does not change to a percentage of sensor span. For further explanation, see Fig.2	100	-19999 to 9999
PROTECT LEVEL			
TO ENTER : When displaying PV / SP (Process Variable / Setpoint) hold level and mode keys down for at least 3 seconds. TO EXIT : Hold level and mode keys down for at least 1 second. TO SCROLL : Press mode key. TO CHANGE VALUES: Press or hold up / down keys.			
Symbol	Description	Default	Max Range
PMoV	Password (pass number) to enter protect level.	N/A	N/A
oRPE	Protection for Operation and Adjustment Levels. 0 = No protection, 1 = Adjustment Level Restricted, 2 = Adjustment and Operation Levels restricted. 3 = Adjustment, Operation Levels and Setpoint Restricted.	0	0-3
oLPE	Protection for Advanced, Initial, and Communication Levels. 0 = No protection, 1 = Advanced Level Restricted, 2 = Advanced, Initial, and Communication Levels Restricted.	1	0-2
WtPE	Protection for all levels, all parameters. If set to on, no parameters at any level can be changed except for the protect level.	Off	On / Off
PRLP	A new password (pass number) for the protect level can entered here. This can only be changed after the protect level is accessed with the correct password.	N/A	N/A

**Fig. 1 Alarm 1 - SUB 1 Contact
(Burner on / off)**



**Fig. 2 Alarm 2 - SUB2 Contact
(Low Fire Hold)**

