

SP.NO.

9 00

8 00

7 00

6 00

5 00

4 00

3 00

2 00

頁 改番  
PAGE REV.

# Azbil Corporation

# 製品仕様書 SPECIFICATIONS

## 1. Model Number

Model Number	Voltage	Frequency	Flame Response
FRS100B100#-2	AC100V	50/60Hz	3 ± 1s
FRS100B200#-2	AC200V		
FRS100B104#-2	AC100V		2s max
FRS100B204#-2	AC200V		

FRS100Cxxx#-2

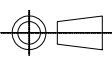
→ Noting : Standard  
D : Inspection certification provided

## 2. General Description

Multi burner flame controller FRS100B is a combustion control device having safe start circuit. When abnormal condition at start of sequence or flame failure in normal running is detected, halts combustion sequence to ensure safety. This device can be used in batch operation of combustion appliances with flame rod.

### 2.1. Features

- (1) Start check function is provided.  
At start of sequence, flame detector and flame relay are checked, if abnormal condition is detected halts the operation not to proceed to ignition trial.
- (2) Compact relay unit can be plugged in to sub-base (to be ordered separately).  
Sub-base can be mounted to panel directly by screws or standard DIN rail.
- (3) Power status, flame detection and completion of start check can be identified by LEDs.
- (4) Flame signal output terminals are provided which deliver flame signal (flame voltage DC 0 ~ 5V) proportionally to flame current of flame detector. By connecting conventional circuit tester simple flame check is possible or continuous flame monitoring is available with DC volt meter or recorder.

作成 DR. Kuma		尺度 SCALE ~	記入のない公差 TOL.UNLESS NOTED ~
検図 CHK Ishii	形番 MODEL FRS100BXXX-2		
認可 APPD Yamada	名称 NAME Multi Burner Controller		
日付 DATE '14-1-6	図番 NO.	AD17561E	改番 REV 00 / 1 / 9

来歴 RECORD	: 日付 DATE	担当 BY	検閲 APPD.
-----------	-----------	-------	----------

SP.NO.

2.2. Composition

(1) Flame Detector and Signal Cable

Flame Detector	Cable Specification (RF coaxial cable)	Allowable length
Flame Rod	5C2V,7C2V (JIS) RG-11/U (JAN)	30m max.

(2) Auxiliary Devices and Parts (to be ordered separately)

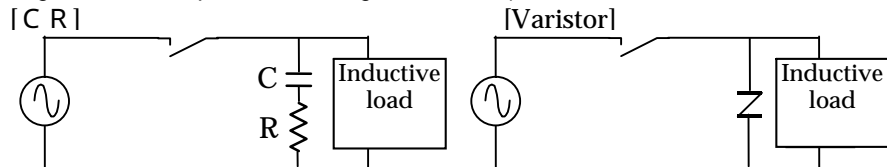
Name	Model No.
Sub-base	FRS50A100
Surge absorber for lightning protection.	83968019-001

3. Specifications

3.1. General Specifications

- (1) Dimension H99 × W99 × D41
- (2) Mass Approx 270g
- (3) Case Material Polycarbonate
- (4) Life 10 years or 100,000cycles  
(at room temperature of 25 . and room humidity and rated voltage)

The cautions about contact transition  
 If inductive loads, such as a relay, are used for the contact output (terminal 3-4 or terminal 3-8) of this vessel, surge voltage will occur between points of contact. Surge voltage generates unevenness on a contact. And contact may carry out locking. When you implement the measure against surge voltage, please connect a surge killer to a load side. Since it becomes a cause by which return time becomes late when a surge killer is used, please be sure to use it after confirming by real load. (The following is an example of a surge absorber)



- (5) Mounting Use sub-base
- (6) Standard Mounting Orientation Vertical indication panel

作成 DR. Kuma		尺度 SCALE ~	記入のない公差 TOL.UNLESS NOTED ~
検図 CHK Ishii	形番 MODEL	FRS100BXXX-2	
認可 APPD Yamada	名称 NAME	Multi Burner Controller	
日付 DATE '14-1-6	図番 NO.	AD17561E	改番 REV 00 / 2 / 9

SP.NO.

# Azbil Corporation

# 製品仕様書 SPECIFICATIONS

## 3.2. Electrical Specifications

### (1) Rated Voltage and Frequency

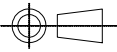
Model No.	Rated Voltage	Frequency
FRS100B100-2	AC100V	50/60Hz
FRS100B200-2	AC200V	
FRS100B104-2	AC100V	
FRS100B204-2	AC200V	

- (2) Allowable Voltage 85 to 110% of rated voltage
- (3) Power Consumption 3W max.
- (4) Dielectric Strength AC1500V,50/60Hz,1min  
AC1800V,50/60Hz,1s  
Between primary (Terminal 1,2,3,4,7 and 8) and secondary terminals (Terminal 5,A and B)  
Between primary terminals and earth terminal 6
- (5) Insulation Resistance 50M min. DC500V megger  
Between primary (Terminal 1,2,3,4,7 and 8) and secondary terminals (Terminal 5,A and B)  
Between primary terminals and earth terminal 6
- (6) Thunder Lightning Surge 10kV,1.2/50us  
(JEC-187, surge impedance 75 min.)  
Connect surge absorber between hot side of power terminal and earth  
Recommended Surge Absorber  
Spec. No.10013(83968019-001)

## 3.3. Terminal Ratings

	Terminal No.	Circuit	Rating
Sub-base	1 ( R )	Power Source	Rated Voltage
	2 ( S )		
	3	Contact output common	~
	4	Flame output (1K,2K)	250VA
	5(F)	Flame detector F lead	~
	6(G)	Flame detector G lead and earth	Class D
	7	Start/Stop Input	Rated Voltage
	8	Start check output (1K)	250VA
Controller	A*	Flame voltage measuring terminal (-)	Voltage range: DC0 to5V*
	B*	Flame voltage measuring terminal (+)	

\* Connect the equipment more than input impedance 100k .

作成 DR. Kuma		尺度 SCALE ~	記入のない公差 TOL.UNLESS NOTED ~
検図 CHK Ishii	形番 MODEL FRS100BXXX-2		
認可 APPD Yamada	名称 NAME Multi Burner Controller		
日付 DATE '14-1-6	図番 NO.	AD17561E	改番 REV 00

頁 改番 PAGE REV.	改番 REV.	来歴 RECORD	: 日付 DATE	担当 BY	検閲 APPD.
-------------------	------------	--------------	--------------	----------	-------------

3.4. Characteristics and Timing

(1) Flame Sensibility

Flame establishment            1.0V max.  
Flame-out response            0.2V min.

(2) Flame Voltage Output

Output range                    DC0 to 5V  
(1V flame voltage is delivered corresponding to 1μA flame current)

(3) Flame Response

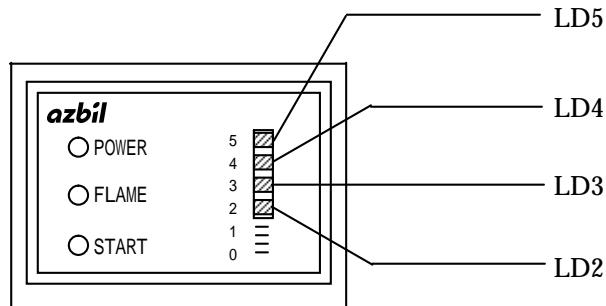
Model No.	Flame Response
FRS100B100-2	3 ± 1s
FRS100B200-2	3 ± 1s
FRS100B104-2	2s max.
FRS100B204-2	2s max.

(Flame voltage at 2V)

(4) Flame voltage level

The following LED according to a flame voltage output is turned on.

- LD5    Flame voltage output 4.5V ± 0.3V ~
- LD4    Flame voltage output 3.5V ± 0.3V ~ 4.5V ± 0.3V
- LD3    Flame voltage output 2.5V ± 0.3V ~ 3.5V ± 0.3V
- LD2    Flame voltage output 1.5V ± 0.3V ~ 2.5V ± 0.3V

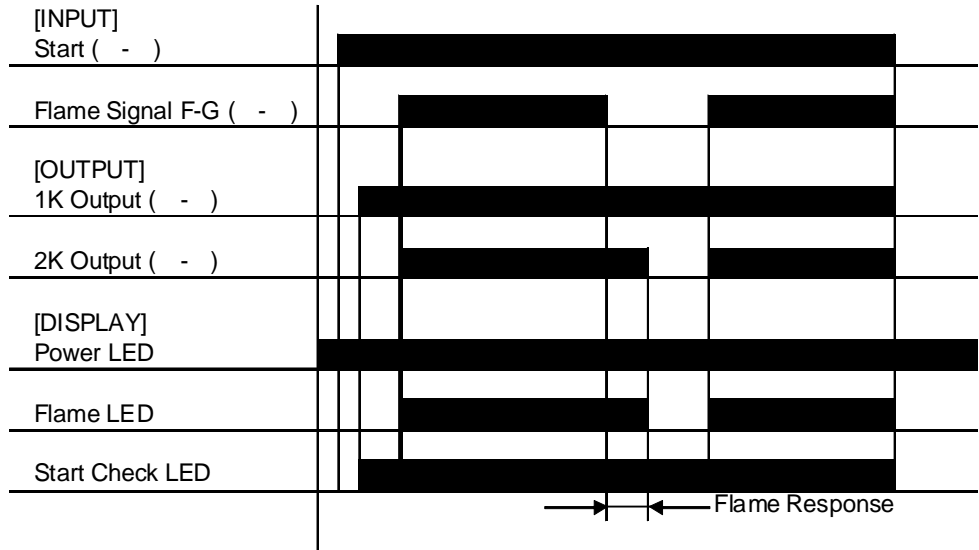


作成 DR. Kuma		尺度 SCALE ~	記入のない公差 TOL.UNLESS NOTED ~
検図 CHK Ishii	形番 MODEL	FRS100BXXX-2	
認可 APPD Yamada	名称 NAME	Multi Burner Controller	
日付 DATE '14-1-6	図番 NO.	AD17561E	改番 REV 00 / 4 / 9

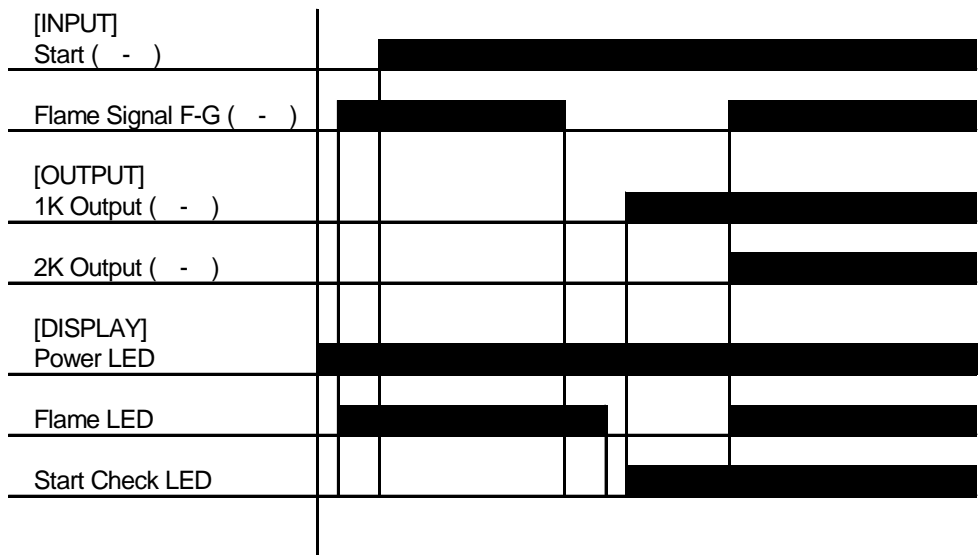


SP.NO.

4. Operation  
(1) Normal

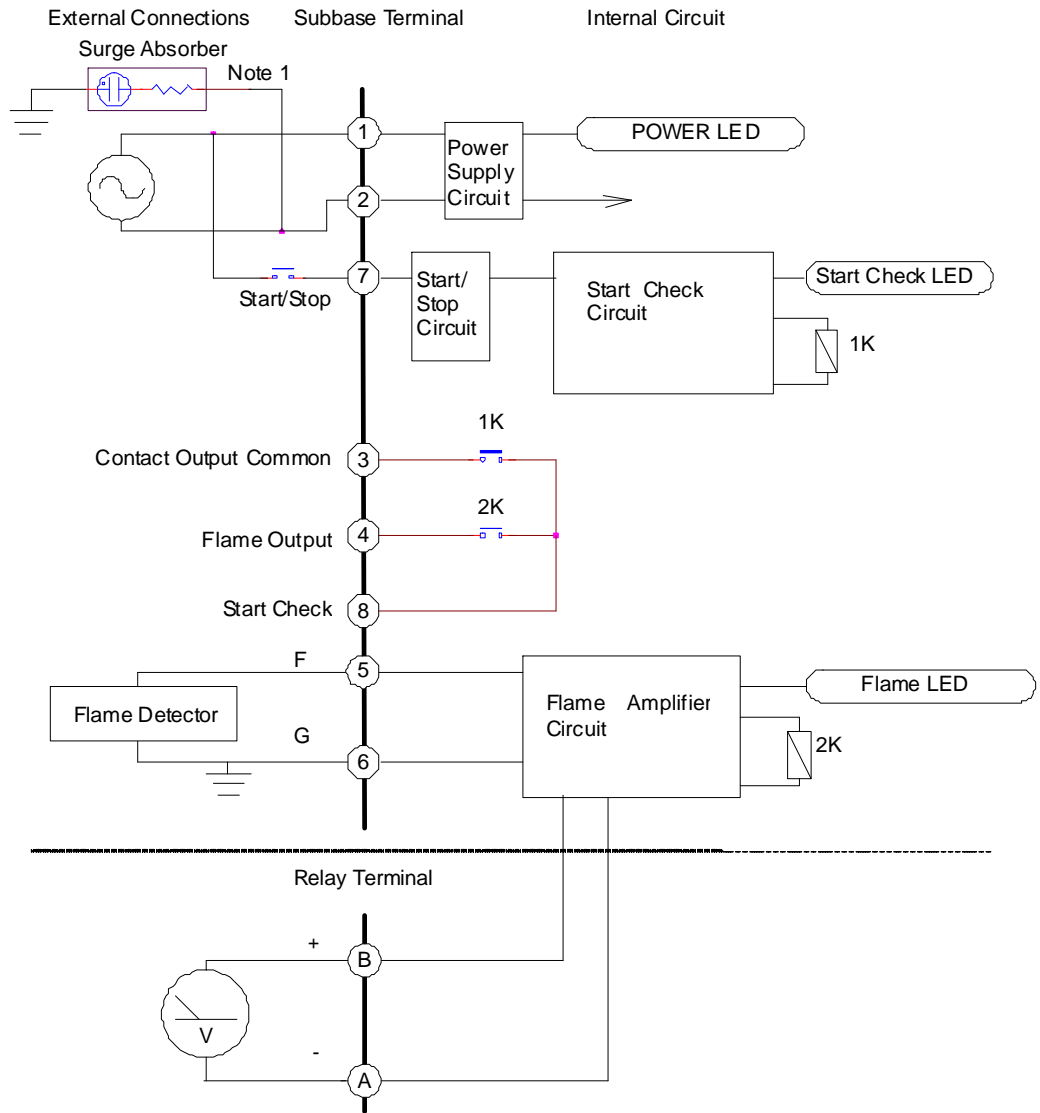


(2) Operation at False Flame



作成 DR. Kuma		尺度 SCALE ~	記入のない公差 TOL.UNLESS NOTED ~
検図 CHK Ishii	形番 MODEL	FRS100BXXX-2	
認可 APPD Yamada	名称 NAME	Multi Burner Controller	
日付 DATE '14-1-6	図番 NO.	AD17561E	改番 REV 00
			6/9

5. Wiring Diagram



Note 1: Provide with ONE surge absorber for multiple relay connected to common power source.

作成 DR. Kuma		尺度 SCALE ~	記入のない公差 TOL.UNLESS NOTED ~
検図 CHK Ishii	形番 MODEL	FRS100BXXX-2	
認可 APPD Yamada	名称 NAME	Multi Burner Controller	
日付 DATE '14-1-6	図番 NO.	AD17561E	改番 REV 00 / 7 / 9

頁 PAGE	改番 REV.	改番 REV.	来歴 RECORD	: 日付 DATE	担当 BY	検閲 APPD.
-----------	------------	------------	--------------	--------------	----------	-------------

SP.NO.

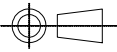
# Azbil Corporation

## 製品仕様書

### SPECIFICATIONS

#### 6. Caution in Use

- (1) Disconnect power supply before beginning wiring to terminals to prevent equipment damage or malfunction.
- (2) Be sure to check connections after wiring. Incorrect wiring can cause damage or malfunction.
- (3) Do not put on a supply power to this controller with the terminal (1-7) short-circuited.
- (4) In keeping with the technical standards for electrical equipment, the burner must have D-type (resistance of 100 or less) grounding. And terminal 6 shall be connected to the ground.
- (5) Connect high tension cable of ignition transformer firmly. Loose connection may generate high-frequency wave noise and causes malfunction.
- (6) Power source line and/or high tension cable of ignition transformer and detector cable shall not be bound or wired in a same conduit. Especially, high tension cable of ignition transformer must be wired separately and more than 10cm away from this controller.
- (7) Solenoid valve shall be energized from the power source, one side of line is potentially grounded, otherwise it may be unsafe in case of fault.
- (8) When DIN rail mounting is used, remove relays from the sub-base and ship them by exclusive container. If shipped as assembled it may damage the products.
- (9) Do not install this product where;
  - special chemicals or those vapors exist (ammonia, sulfur, chlorine, ethylene compound, acid, etc.)
  - exposed to splash or water drop
  - exposed to high temperature
  - vibration continue for a long period
- (10) if this product is used in excess of its service life, failure may easily occur. Its life is the shorter of (1)100,000 relay ON-OFF cycles, or (2)ten years from the time specified by the production data code. This life was stipulated on the basis of relay and capacitor manufacturer's specifications, and its records of actual product life.
  - Relay contacts ON/OFF operation - 100,000 times
  - Electrolytic capacitors - 1000 hour at 105-degree C
 The life of electrolytic capacitor is ten years in the case of 25-degree C ambient air temperature. The life of the parts will become half, if ambient air temperature rises by 10 degrees C.
- (11) The risk of the danger side failure cannot be removed completely, when it is used over a long period of time. The controller used for then years or more should stop use. And should exchange it for a new controller. The danger side failure has solder degradation and insulated decay of a printed circuit board. They has the possibility of ignition.

作成 DR. Kuma		尺度 SCALE ~	記入のない公差 TOL.UNLESS NOTED ~
検図 CHK Ishii	形番 MODEL	FRS100BXXX-2	
認可 APPD Yamada	名称 NAME	Multi Burner Controller	
日付 DATE '14-1-6	図番 NO.	AD17561E	改番 REV 00
頁 改番 PAGE REV.	改番 REV.	来歴 RECORD	日付 DATE
		担当 BY	検閲 APPD.

頁 改番  
PAGE REV.

改番  
REV.

来歴  
RECORD

: 日付  
: DATE

担当  
BY

検閲  
APPD.

'14-1-6

図番  
NO.

AD17561E

改番 REV  
00

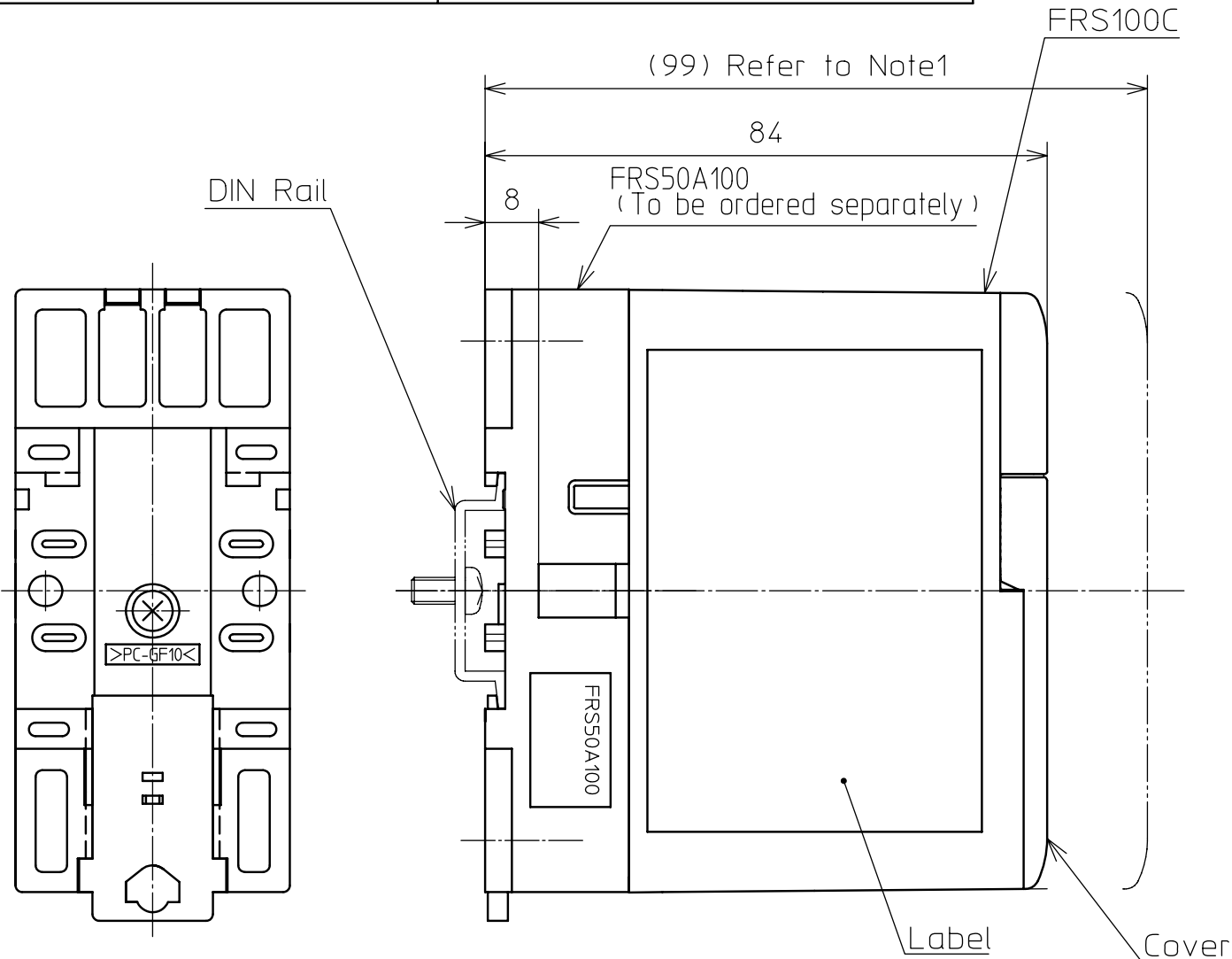
8/9



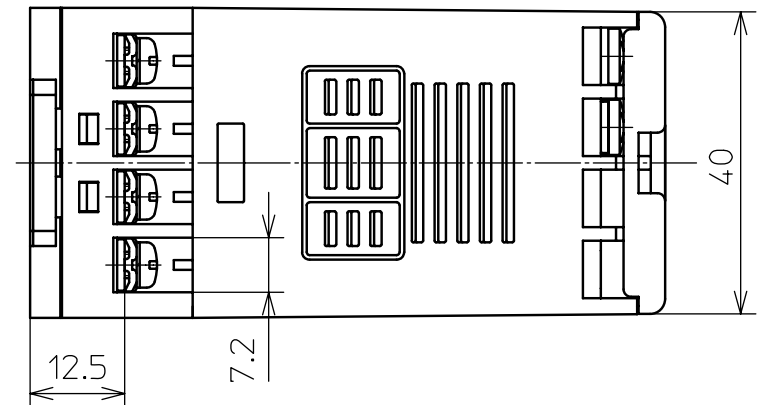
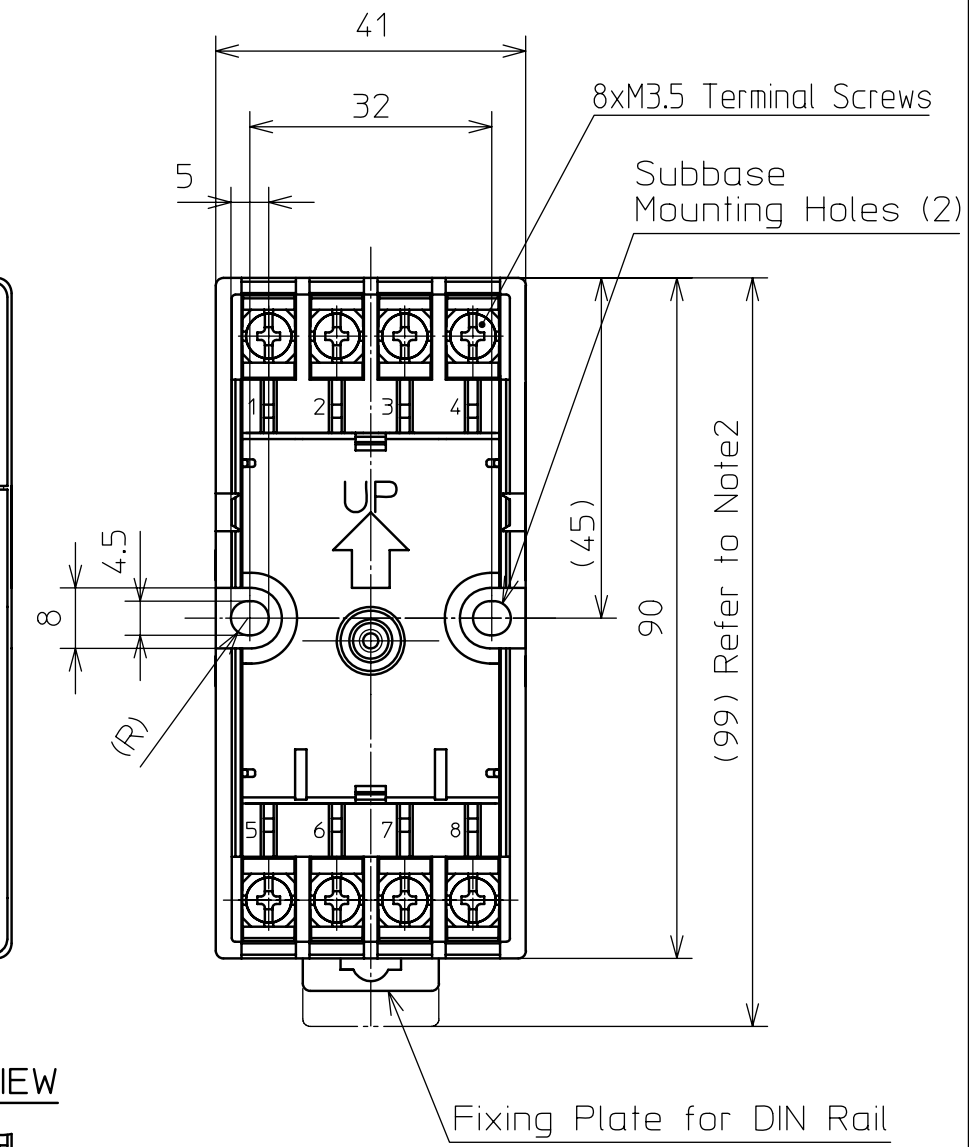
SP. No.

Azbil Corporation

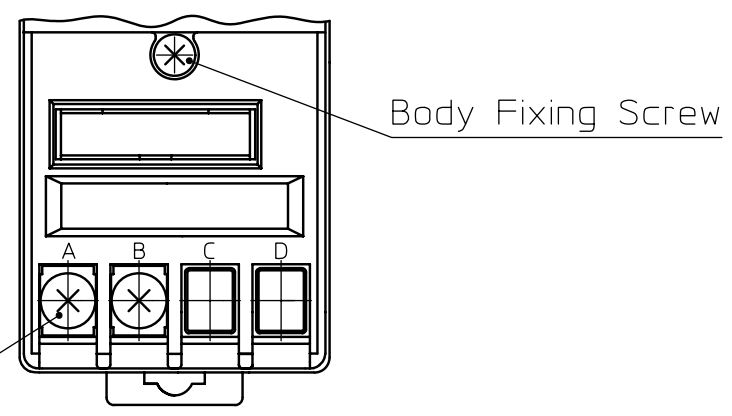
製品仕様書  
SPECIFICATIONS



FRS50A100 (FRONT VIEW WITHOUT RELAY)  
Subbase To be ordered separately



COVER REMOVED VIEW



3. This drawing shows FRS100 assembled on FRS50A100.  
2. Necessary dimension to release fixing plate.  
Note1. Dimension required for mounting or removing the device.

作成DR. Y.Kumazawa	検図CHK. H.Aizawa	認可APPD T.Yamada	日付DATE 13-9-5	来歴 RECORD	日付 DATE	担当 BY	検閲 APPD.	尺度SCALE 1:1	記入のない公差 TOL. UNLESS NOTED
形番 MODEL		名称 NAME		図番 NO.		改番REV.		FRS100BXXX-2	
								Multi Burner Controller	
								AD17561E	
								00 / 9	

頁 改番  
PAGE REV.

SP.NO.	<b>Azbil Corporation</b>		<b>製品仕様書</b> <b>SPECIFICATIONS</b>			
	<b>Terms and Conditions</b>					
	<p>We would like to express our appreciation for your purchase and use of Azbil Corporation's products. You are required to acknowledge and agree upon the following terms and conditions for your purchase of Azbil Corporation's products (system products, field instruments, control valves, and control products), unless otherwise stated in any separate document, including, without limitation, estimation sheets, written agreements, catalogs, specifications and instruction manuals.</p>					
	<p><b>1 Warranty period and warranty scope</b></p>					
	<p><b>1.1 Warranty period</b></p> <p>Azbil Corporation's products shall be warranted for one (1) year from the date of your purchase of the said products or the delivery of the said products to a place designated by you.</p>					
	<p><b>1.2 Warranty scope</b></p> <p>In the event that Azbil Corporation's product has any failure attributable to azbil during the aforementioned warranty period, Azbil Corporation shall, without charge, deliver a replacement for the said product to the place where you purchased, or repair the said product and deliver it to the aforementioned place.</p> <p>Notwithstanding the foregoing, any failure falling under one of the following shall not be covered under this warranty:</p>					
	<p>(1) Failure caused by your improper use of azbil product (Noncompliance with conditions, environment of use, precautions, etc. set forth in catalogs, specifications, instruction manuals, etc.);</p> <p>(2) Failure caused for other reasons than Azbil Corporation's product;</p> <p>(3) Failure caused by any modification or repair made by any person other than Azbil Corporation or Azbil Corporation's subcontractors;</p> <p>(4) Failure caused by your use of Azbil Corporation's product in a manner not conforming to the intended usage of that product;</p> <p>(5) Failure that the state-of-the-art at the time of Azbil Corporation's shipment did not allow Azbil Corporation to predict; or</p> <p>(6) Failure that arose from any reason not attributable to Azbil Corporation, including, without limitation, acts of God, disasters, and actions taken by a third party.</p> <p>Please note that the term "warranty" as used herein refers to equipment-only-warranty, and Azbil Corporation shall not be liable for any damages, including direct, indirect, special, incidental or consequential damages in connection with or arising out of Azbil Corporation's products.</p>					
	<p><b>2 Ascertainment of suitability</b></p> <p>You are required to ascertain the suitability of Azbil Corporation's product in case of your use of the same with your machinery, equipment, etc. (hereinafter referred to as "Equipment") on your own responsibility, taking the following matters into consideration:</p>					
	<p>(1) Regulations and standards or laws that your Equipment is to comply with.</p> <p>(2) Examples of application described in any documents provided by Azbil Corporation are for your reference purpose only, and you are required to check the functions and safety of your Equipment prior to your use.</p> <p>(3) Measures to be taken to secure the required level of the reliability and safety of your Equipment in your use</p> <p>Although azbil is constantly making efforts to improve the quality and reliability of Azbil Corporation's products, there exists a possibility that parts and machinery may break down.</p> <p>You are required to provide your Equipment with safety design such as fool-proof design, *1 and fail-safe design *2 (anti-flame propagation design, etc.), whereby preventing any occurrence of physical injuries, fires, significant damage, and so forth. Furthermore, fault avoidance, *3 fault tolerance, *4 or the like should be incorporated so that the said Equipment can satisfy the level of reliability and safety required for your use.</p> <p>*1. A design that is safe even if the user makes an error. *2. A design that is safe even if the device fails. *3. Avoidance of device failure by using highly reliable components, etc. *4. The use of redundancy.</p>					
	<p><b>3 Precautions and restrictions on application</b></p> <p>Azbil Corporation's products other than those explicitly specified as applicable (e.g. azbil Limit Switch For Nuclear Energy) shall not be used in a nuclear energy controlled area (radiation controlled area).</p> <p>Any Azbil Corporation's products shall not be used for/with medical equipment.</p> <p>The products are for industrial use. Do not allow general consumers to install or use any Azbil Corporation's product. However, azbil products can be incorporated into products used by general consumers. If you intend to use a product for that purpose, please contact one of our sales representatives.</p> <p>In addition, you are required to conduct a consultation with our sales representative and understand detail specifications, cautions for operation, and so forth by reference to catalogs, specifications, instruction manual, etc. in case that you intend to use azbil product for any purposes specified in (1) through (6) below.</p> <p>Moreover, you are required to provide your Equipment with fool-proof design, fail-safe design, anti-flame propagation design, fault avoidance, fault tolerance, and other kinds of protection/safety circuit design on your own responsibility to ensure reliability and safety, whereby preventing problems caused by failure or nonconformity.</p>					
頁	改番	改番	来歴	日付	担当	照査
	REV.		RECORD	DATE	BY	CHK.

SP. NO.	Azbil Corporation		製品仕様書 SPECIFICATIONS			
			<p>(1) For use under such conditions or in such environments as not stated in technical documents, including catalogs, specification, and instruction manuals</p> <p>(2) For use of specific purposes, such as:</p> <ul style="list-style-type: none"> <li>* Nuclear energy/radiation related facilities [For use outside nuclear energy controlled areas] [For use of Azbil Corporation's Limit Switch For Nuclear Energy]</li> <li>* Machinery or equipment for space/sea bottom</li> <li>* Transportation equipment [Railway, aircraft, vessels, vehicle equipment, etc.]</li> <li>* Antidisaster/crime-prevention equipment</li> <li>* Burning appliances</li> <li>* Electrothermal equipment</li> <li>* Amusement facilities</li> <li>* Facilities/applications associated directly with billing</li> </ul> <p>(3) Supply systems such as electricity/gas/water supply systems, large-scale communication systems, and traffic/air traffic control systems requiring high reliability</p> <p>(4) Facilities that are to comply with regulations of governmental/public agencies or specific industries</p> <p>(5) Machinery or equipment that may affect human lives, human bodies or properties</p> <p>(6) Other machinery or equipment equivalent to those set forth in items (1) to (5) above which require high reliability and safety</p> <p><b>4 Precautions against long-term use</b></p> <p>Use of Azbil Corporation's products, including switches, which contain electronic components, over a prolonged period may degrade insulation or increase contact-resistance and may result in heat generation or any other similar problem causing such product or switch to develop safety hazards such as smoking, ignition, and electrification.</p> <p>Although acceleration of the above situation varies depending on the conditions or environment of use of the products, you are required not to use any Azbil Corporation's products for a period exceeding ten (10) years unless otherwise stated in specifications or instruction manuals.</p> <p><b>5 Recommendation for renewal</b></p> <p>Mechanical components, such as relays and switches, used for Azbil Corporation's products will reach the end of their life due to wear by repetitious open/close operations.</p> <p>In addition, electronic components such as electrolytic capacitors will reach the end of their life due to aged deterioration based on the conditions or environment in which such electronic components are used.</p> <p>Although acceleration of the above situation varies depending on the conditions or environment of use, the number of open/close operations of relays, etc. as prescribed in specifications or instruction manuals, or depending on the design margin of your machine or equipment, you are required to renew any Azbil Corporation's products every 5 to 10 years unless otherwise specified in specifications or instruction manuals.</p> <p>System products, field instruments (sensors such as pressure/flow/level sensors, regulating valves, etc.) will reach the end of their life due to aged deterioration of parts. For those parts that will reach the end of their life due to aged deterioration, recommended replacement cycles are prescribed. You are required to replace parts based on such recommended replacement cycles.</p> <p><b>6 Other precautions</b></p> <p>Prior to your use of Azbil Corporation's products, you are required to understand and comply with specifications (e.g., conditions and environment of use), precautions, warnings/cautions/notices as set forth in the technical documents prepared for individual Azbil Corporation's products, such as catalogs, specifications, and instruction manuals to ensure the quality, reliability, and safety of those products.</p> <p><b>7 Changes to specifications</b></p> <p>Please note that the descriptions contained in any documents provided by azbil are subject to change without notice for improvement or for any other reason.</p> <p>For inquires or information on specifications as you may need to check, please contact our branch offices or sales offices, or your local sales agents.</p> <p><b>8 Discontinuance of the supply of products/parts</b></p> <p>Please note that the production of any Azbil Corporation's product may be discontinued without notice.</p> <p>For repairable products, we will, in principle, undertake repairs for five (5) years after the discontinuance of those products. In some cases, however, we cannot undertake such repairs for reasons, such as the absence of repair parts. For system products, field instruments, we may not be able to undertake parts replacement for similar reasons.</p> <p><b>9 Scope of services</b></p> <p>Prices of Azbil Corporation's products do not include any charges for services such as engineer dispatch service. Accordingly, a separate fee will be charged in any of the following cases:</p> <ol style="list-style-type: none"> <li>(1) Installation, adjustment, guidance, and attendance at a test run</li> <li>(2) Maintenance, inspection, adjustment, and repair</li> <li>(3) Technical guidance and technical education</li> <li>(4) Special test or special inspection of a product under the conditions specified by you</li> </ol> <p>Please note that we cannot provide any services as set forth above in a nuclear energy controlled area (radiation controlled area) or at a place where the level of exposure to radiation is equivalent to that in a nuclear energy controlled area.</p>			
頁	改番	改番 REV.	来歴 RECORD	日付 DATE	担当 BY	照査 CHK.

AAS-511A-014-04