OP477-V02

CALIBRATION CERTIFICATE

Model :- FL-SC-AO04-I

Claimed Accuracy :- For TC :0.25% of full Scale ± 1°C
For RTD :0.1% of full Scale ± 1°C
For V & I :0.5% of full Scale

Traceability :-

50X25

This Units Has Been verified For All functional parameters mentioned in Operating Instruction.

Analog Parameters [For Applicable Product]

The Calibration of this unit has been verified at the following value for selection channels :-

Analog Input :-	CH0	CH1	CH2	CH3	CH4	CH5
TC						
RTD						
AI						
AV						

NOTE : Analog Input/Analog Output Has Been Verified At the following Value :

Sensor	Calibration Temp(°C)	Display Value(°C)	Sensor	Calibration Value	Display Value
K	35.0	35.0	Voltage (VDC)	0.000 10.000	0.000 10.000
	700.0	700.0			
	1350.0	1350.0			
PT100	0.0	0.0	Current (mA)	0.000 20.000	0.000 20.000
	500.0	500.0			
	800.0	800.0			

The thermocouple/RTD curves are Linearized in this microprocessor based product , and hence the value interpolated between the readings shown above are also equally accurate, at every point in the curve.

Product Calibration Is Traceable to NABL Standard.
Unit is accepted as accuracy is within the specified limit of claimed accuracy and certifiedis valid up to one year from the date of issue.

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FL-SC-AO04-I
Operating Instructions

1. PRODUCT PROFILE

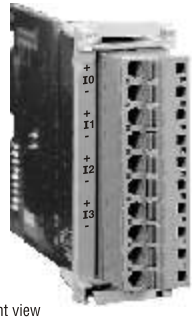


Figure 1.1 : Front view

2. DESCRIPTION

- FL-SC-AO04-I card as shown in Figure 1.1 is used as a plug-in module in Flexys series and not as an independent module.
- Easy to connect and replace.

NOTE : For installation procedure, refer FL-TX4-LG-X-X-X / FL-RL-BS-6 Operating instruction.

3. ELECTRICAL SPECIFICATIONS

Number of Channels per card	4 Channels
Output Range	0 – 20mA
Digital resolution	0.0 to 100.0% = 0 to 20 mA
Input impedance in signal range	<800Ω
Analog output error at 25°C	±0.25% of full scale
Non linearity	±0.25% of full scale
Conversion time	100 ms
Short circuit Protection	NA
Over range value	10% of full scale
Channel isolation	No
Operating Temperature	0 to 55°C
Storage Temperature	-20 to 70°C
Humidity	95%
Connector	Spring type pluggable terminal block (5.08 mm pitch)
Weight (g)	40

NOTE : FL-TX4-PS-230V card limitations
1) Maximum 1 FL-SC-AO04-I card.
2) Not supported FL-SC-AO04-I if FL-SC-RO08 used and vice-versa.

OP477-V02

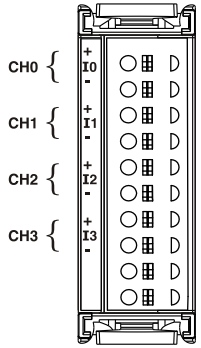
4. SOFTWARE DETAILS

1. Configure FL-SC-AO04-I card for a given Controller (Flexys series) using SELPRO programming software.
   For details of the software and configuration method, please refer to the software manual.
2. Auto generated FL-SC-AO04-I registers in SELPRO software :
   Example :
   FL-SC-AO04-I card is configured in Flexys series via SELPRO software in slot number 1.

R/W : Read / Write

REGISTER NAME	ATTRIBUTES	DESCRIPTION
PS1_AO4_X_OPT0	R/W	Set output % for CH0 ~ CH3
PS1_AO4_X_OPT1	R/W	
PS1_AO4_X_OPT2	R/W	
PS1_AO4_X_OPT3	R/W	

5. TYPICAL WIRING DIAGRAM



6. SAFETY SUMMARY

- To prevent risk of electric shock, power supply to the controller must be kept off while wiring.
- Wiring shall be done strictly according to the terminal layout provided in the operating manual.

NOTE : For safety precautions, refer FL-TX4-LG-X-X-X / FL-RL-BS-6 operating instruction

DISCLAIMER LIABILITY

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However the information in this publication is reviewed and any necessary corrections are included in subsequent editions.

? SERVICE DETAILS

This device contains no user serviceable parts and requires special equipment and specialized engineers for repair.
Please contact service center for repair on the following numbers :
Tel. No. : + 91-7498077172 ; **Email :** service@selec.com
NO WARRANTY ON UNIT DAMAGED DUE TO WRONG POWER SUPPLY.

(Specifications are subject to change, since development is a continuous process.)

Selec Controls Pvt. Ltd., India

Factory Address :
EL-27/1, Electronic Zone, TTC Industrial Area, MIDC, Mahape, Navi Mumbai - 400 710, INDIA.
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OP388-V02

1. PRODUCT PROFILE

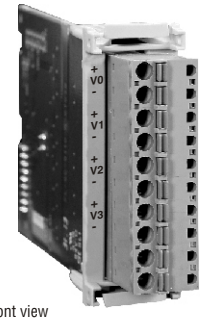


Figure 1.1 : Front view

2. DESCRIPTION

- FL-SC-AO04-V card as shown in Figure 1.1 is used as a plug-in module in Flexys series and not as an independent module.
- Easy to connect and replace.

NOTE : For installation procedure, refer FL-TX4-LG-X-X-X / FL-RL-BS-6 Operating instruction.

3. ELECTRICAL SPECIFICATIONS

Number of Channels per card	4 Channels
Output Range	0 – 10V
Digital resolution	0.0 to 100.0% = 0 to 10V
Input impedance in signal range	≥ 1 kΩ
Analog output error at 25°C	±0.25% of full scale
Non linearity	±0.25% of full scale
Conversion time	100 ms
Short circuit Protection	Voltage output has short circuit protection, but a long period of short circuit may cause internal wire damage.
Over range value	10% of full scale
Channel isolation	No
Operating Temperature	0 to 55°C
Storage Temperature	-20 to 70°C
Humidity	95%
Connector	Spring type pluggable terminal block (5.08 mm pitch)
Weight (g)	40

NOTE : FL-TX4-PS-230V card limitations
1) Maximum 1 FL-SC-AO04-V card.
2) Not supported FL-SC-AO04-V if FL-SC-RO08 used and vice-versa.

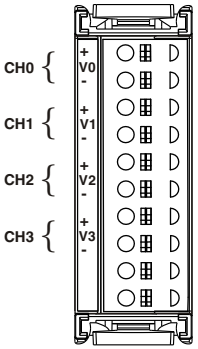
4. SOFTWARE DETAILS

1. Configure FL-SC-AO04-V card for a given Controller (Flexys series) using SELPRO programming software.
   For details of the software and configuration method, please refer to the software manual.
2. Auto generated FL-SC-AO04-V registers in SELPRO software :
   Example :
   FL-SC-AO04-V card is configured in Flexys series via SELPRO software in slot number 1.

REGISTER NAME	ATTRIBUTES	DESCRIPTION
PS1_AO4_X_OPT0	R/W	Set output % for CH0 ~ CH3
PS1_AO4_X_OPT1	R/W	
PS1_AO4_X_OPT2	R/W	
PS1_AO4_X_OPT3	R/W	

R/W : Read / Write

5. TYPICAL WIRING DIAGRAM

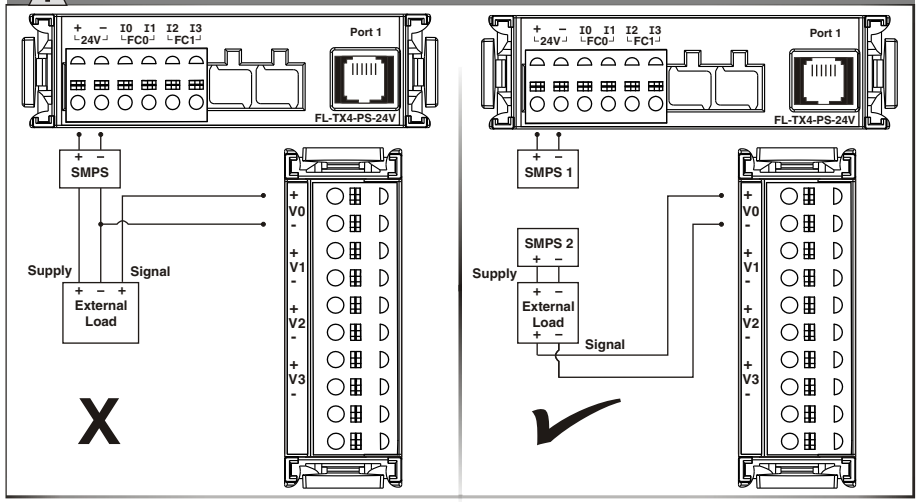


6. SAFETY SUMMARY

- To prevent risk of electric shock, power supply to the controller must be kept off while wiring.
- Wiring shall be done strictly according to the terminal layout provided in the operating manual.

NOTE : For safety precautions, refer FL-TX4-LG-X-X-X / FL-RL-BS-6 operating instruction

WARNING



➢ When using Flexys 24V DC power supply card, Analog output ground and power supply ground should not be shorted under any circumstances, as shown. Similarly when using Flexys 230V AC power supply card, Analog output ground and sensor supply (SS-) should not be shorted. This will cause irreversible damage to FL-SC-AO04-V card.

7. ORDER CODE INFORMATION

ORDER CODE	DESCRIPTION	CERTIFICATION	
		CE	c UL us LISTED
FL-SC-AO04-V-CE	Voltage Output (0-10V)	■	——

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7. MAX RO / AO CARD CURRENT LIMIT

Product	Supply Voltage	Available max. Current for RO / AO Cards
Flexys GT35	230VAC	160mA
	24VDC	No limitation
Flexys Panel TX4/ Flexys Rail	230VAC	120mA
	24VDC	No limitation

Limitations of Card Configuration for 230VAC Variants :
Current Consumption
1. Per RO - 7.5mA
2. Per AO - 25mA

Below table shows some of the Flexys IO Cards configuration:

Flexys IO Cards	Total No. of Cards	No. of ROs + AOs	Total Current Consumption(mA)	Flexys Panel TX4/ Flexys Rail	Flexys GT35
FL-SC-RO08	1	8 + 0	60	Supported	Supported
FL-SC-AI03-U-AO02-U	1	0 + 2	50	Supported	Supported
FL-SC-RO08- FL-SC-AI03-U-A002-U	2	8 + 2	110	Supported	Supported
FL-SC-RO08- FL-SC-RO08- FL-SC-AI03-U-A002-U	3	16 + 2	170	Not Supported	Not Supported

PLC enters stop mode if card configuration is not supported.

8. SAFETY SUMMARY

- To prevent risk of electric shock, power supply to the controller must be kept off while wiring.
- Wiring shall be done strictly according to the terminal layout provided in the operating manual.

NOTE : For safety precautions, refer FL-TX4-LG-X-X-X / FL-RL-BS-6 / FlexysGT35 Operating instruction

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FL-SC-AI03-U-AO02-U
Operating Instructions

1. PRODUCT PROFILE

Figure 1.1 : Front view

2. DESCRIPTION

- FL-SC-AI03-U-AO02-U card as shown in figure 1.1 is used as a plug - in module in Flexys Series, EXP FLE 2M, and not as an independent module
- Easy to connect and replace
- Scaling to engineering units
- Real - time channel sampling

For installation procedure, refer FL-TX4-LG-X-X-X / FL-RL-BS-6/Flexys GT35/EXP FLEX 2M Operating Instruction.

3. ELECTRICAL SPECIFICATIONS

Number of Analog Input Channels	3
Number of Analog Output Channels	2
Conversion time	100 ms
Channel isolation	No
Operating Temperature	0° to 55°C
Storage Temperature	-20° to 70°C
Humidity	95.00%
Connector	Spring type pluggable terminal Block (3.5mm pitch)
Weight (grams)	41.0

ANALOG INPUT

Module	Voltage	Current	TC	RTD
Sensor type	0-10V(DC)	0-20mA(DC)	J,K,T,R,S,C,E,B,N,L,U, W,PLA TINEL II, MILLIVOLT (5 TO 65mV)	PT-100
Measurement Range	0-10V(DC)	0-20mA(DC)	As per sensor selection	-100°C to 850°C
Input Impedance in signal range	330KΩ	100Ω	470KΩ	470KΩ
Analog input error at 25°C	±0.25% of full scale	±0.25% of full scale	0.5% of full scale	0.1% of full scale
Absolute input range	±20V	+50mA	5V	NA
Non linearity	±0.25% of full scale	±0.25% of full scale	0.25% of full scale ±1°C	0.1 % of full scale±1°C
Under range value	<-1V	<-2mA	<-199°C	<-140°C
Over range value	>+11V	>+22mA	Depends on sensor type	>850°C
Resolution	2.44mv	4.88mA	0.1°C	0.1°C
Digital Resolution	14 bits	14 bits	14 bits	14 bits
Protection against polarity inversion	Yes	Yes	Yes	Yes

ANALOG OUTPUT		
Module	Current	Voltage
Output Range	0-20 mA	0-10V
Digital Resolution	0.0 to 100.0% = > 0 to 20 mA	0.0 to 100.0%=> 0 to 10V
Input impedance in signal range	<700Ω	>=1KΩ
Analog output error at 25°C	±0.25% of full scale	±0.25% of full scale
Non linearity	±0.25% of full scale	±0.25% of full scale
Conversion time	100 ms	100 ms
Short circuit Protection	NA	Voltage output has short circuit protection, but a long period of short circuit may cause internal damage
Overrange value	10% of full scale	

4. TYPICAL WIRING DIAGRAM

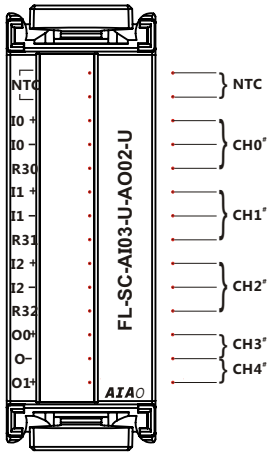

Figure 1.2 : Wiring Diagram

(CH0, CH1, CH2)- For Analog input calibration purpose
(CH3, CH4)- For Analog output calibration purpose

5. TYPICAL JUMPER DIAGRAM

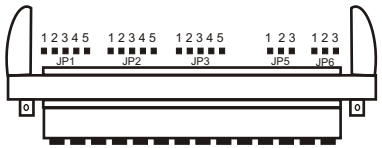

Figure 1.3 : Top view (Jumper Selection)

ANALOG INPUT		
Sensor type	Jumper selection	Jumper no.
TC / RTD	Short pin 1 & pin 2	JP1,JP2,JP3 for CH0, CH1,CH2 resp.
Current	Short pin 2 & pin 3	
Voltage	Short pin 4 & pin 5	
ANALOG OUTPUT		
Current	Short pin 1 & pin 2	JP5,JP6 for CH3,CH4 resp.
Voltage	Short pin 2 & pin 3	

NOTE : Default jumper selection is TC/RTD (i.e pin 1 & pin 2)for Analog input
Default jumper selection is Voltage (i.e pin 2 & 3) for Analog Output

6. SOFTWARE DETAILS

1. Configure FL-SC-AI03-U-AO02-U card for a given Controller (Flexys series)using SELPRO programming software for details of the software and configuration method, please refer to the software manual.
2. Auto generated FL-SC-AI03-U-AO02-U registers in SELPRO software :
3. Sensor type gets initialized at power ON

Example : FL-SC-AI03-U-AO02-U card is configured in Flexys series via SELPRO software in slot number 1.

Register Name	Attributes	Description
PS1_AI3_U_SEN0	R/W	**Sensor Selection** PS1_AI3_U_SENx = 0 -12 (TC) PS1_AI3_U_SENx = 13 (RTD) PS1_AI3_U_SENx = 14 (mV) PS1_AI3_U_SENx = 15 (V) PS1_AI3_U_SENx = 16 (I)
PS1_AI3_U_SEN1	R/W	
PS1_AI3_U_SEN2	R/W	
PS1_AI3_U_PV0	R	**Process values for CH0- CH2** At Sensor break / Sensor reverse / Over range / Under range : PS1_AI3_U_PVx = 0
PS1_AI3_U_PV1	R	
PS1_AI3_U_PV2	R	
PS1_AI3_U_PVS0	R	**Process value status for CH0 - CH2** At Sensor break / Over range condition : PS1_AI3_U_PVSx = 2 At Sensor reverse/ Under range condition : PS1_AI3_U_PVSx = 1 Otherwise when Sensor OK : PS1_AI3_U_PVSx = 0
PS1_AI3_U_PVS1	R	
PS1_AI3_U_PVS2	R	
PS1_AO2_U_OPT0	R/W	Set Output % 0.0 - 100.0 %
PS1_AO2_U_OPT1	R/W	
PS1_AO2_U_TYP0	R/W	Set Type PS1_AO2_U_TYPy = 0, for Voltage PS1_AO2_U_TYPy = 1, for Current
PS1_AO2_U_TYP1	R/W	

R : Read only, R/W : Read / Write
Where x = 0 to 2, y = 0 to 1