CALIBRATION CERTIFICATE

Model :- FL-SC-Al06-V

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 :-



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 :-	CHO	CH1	CH2	СНЗ	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
	35.0	35.0			
К	700.0	700.0	Voltage (VDC)	0.000	0.000
	1350.0	1350.0		10.000	10.000
	0.0	0.0			
PT100	500.0	500.0	Current (mA)	0.000 20.000	0.000
	800.0	800.0	()	20.000	20.000

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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1. PRODUCT PROFILE



Figure 1.1 : Front view

3. ELECTRICAL SPECIFICATIONS Number of Channels per card 6 Channels Measurement Range 0-10V Type of input Non-Differential Digital resolution 14 bits Input impedance in signal range 170 kΩ Analog input error at 25°C ± 0.25 % of full scale Absolute input range + 20V Non linearity ± 0.25 % of full scale **Conversion time** 100 ms Protection against polarity inversion Yes Under range value < -1V Over range value > +11V No Channel isolation **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

2. DESCRIPTION

> FL-SC-AI06-V card as shown in Figure 1.1 is

used as a plug-in module in Flexys series and not as an independent module.

FL-SC-AI06-V

Operating Instructions

- Easy to connect and replace
- > Scaling to engineering units
- > Real-time channel sampling
- NOTE : For installation procedure, refer FL-TX4-LG-X-X-X / FL-RL-BS-6 Operating instruction

			-
1. Configure FL-SC-AI06-V card for	REGISTER NAME	ATTRIBUTES	DESCRIPTION
a given Controller (Flexys series) using SELPRO programming	PS1_AI6_V_PV0	R	
software.	PS1_AI6_V_PV1	R	Process Values
For details of the software and	PS1_AI6_V_PV2	R	for CH0 ~ CH5 At Over range /
configuration method, please	PS1_AI6_V_PV3	R	Under range condition :
refer to the software manual.	PS1_AI6_V_PV4	R	$PS1_AI6_V_PVx = 0$
2. Auto generated FL-SC-AI06-V registers in SELPRO software :	PS1_AI6_V_PV5	R	
Example :	PS1_AI6_V_PVS0	R	Process value status
FL-SC-AI06-V card is configured	PS1_AI6_V_PVS1	R	for CH0 ~ CH5 At Over range condition :
in Flexys series via SELPRO	PS1_AI6_V_PVS2	R	$PS1_AI6_V_PVSx = 2$
software in slot number 1 .	PS1_AI6_V_PVS3	R	At Under range condition :
	PS1_AI6_V_PVS4	R	PS1_AI6_V_PVSx = 1 Otherwise :
			0

PS1 AI6 V PVS5

R: Read only; Where x = 0 to 5

5. TYPICAL WIRING DIAGRAM



6. SAFETY SUMMARY

R

> 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

 $PS1_AI6_V_PVSx = 0$

- 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.

Tel. No.: +91-22-41 418 419/430 | Fax No.: +91-22-28471733 | Toll free: 1800 227 353(BSNL/MTNL Subscribers only) Website : www.selec.com | Email : sales@selec.com

Doc. name : OP INST FL-SC-AI06-V

OP470-V02(Page 2 of 2)

1. Configure FL-SC-AI06-I card for	REGISTER NAME	ATTRIBUTES	DESCRIPTION
a given Controller (Flexys series)	PS1_AI6_I_PV0	R	
using SELPRO programming software.	PS1_AI6_I_PV1	R	Process Values
For details of the software and	PS1_AI6_I_PV2	R	for CH0 ~ CH5 At Over range /
configuration method, please	PS1_AI6_I_PV3	R	Under range condition :
refer to the software manual. 2. Auto generated FL-SC-AI06-I registers in SELPRO software : Example :	PS1_AI6_I_PV4	R	$PS1_AI6_I_PVx = 0$
	PS1_AI6_I_PV5	R	
	PS1_AI6_I_PVS0	R	Process value status
	PS1_AI6_I_PVS1	R	for CH0 ~ CH5 At Over range condition :
FL-SC-AI06-I card is configured in Flexys series via SELPRO	PS1_AI6_I_PVS2	R	PS1_AI6_I_PVSx = 2
software in slot number 1.	PS1_AI6_I_PVS3	R	At Under range condition :
	PS1_AI6_I_PVS4	R	PS1_AI6_I_PVSx = 1 Otherwise :
R : Read only ; Where x = 0 to 5	PS1_AI6_I_PVS5	R	$PS1_AI6_I_PVSx = 0$

5. TYPICAL WIRING DIAGRAM



DESCRIPTION

Current Input

(0-20mA)

\succ	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

6. SAFETY SUMMARY

- 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

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? SERVICE DETAILS

ORDER CODE

FL-SC-AI06-I-CE

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.)

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CERTIFICATION

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Doc. name : OP INST FL-SC-AI06-I-RoHS

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OP471

1. PRODUCT PROFILE



Doc. name : OP INST FL-SC-AI06-I-RoHS

Figure 1.1 : Front view

3. ELECTRICAL SPECIFICATIONS	
Number of Channels per card	6 Channels
Measurement Range	0-20mA
Type of input	Non-Differential
Digital resolution	14 bits
Input impedance in signal range	100 Ω
Analog input error at 25°C	± 0.25 % of full scale
Absolute input range	+ 50mA
Non linearity	± 0.25 % of full scale
Conversion time	100 ms
Protection against polarity inversion	Yes
Under range value	< -2mA
Over range value	> +22mA
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

Operating Instructions

FL-SC-AI06-I

2. DESCRIPTION

- FL-SC-AI06-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
- Scaling to engineering units
- Real-time channel sampling
- NOTE : For installation procedure, refer FL-TX4-LG-X-X-X / FL-RL-BS-6 / FL-GT35 Operating instruction

1. Configure FL-SC-AI04-RTD card	REGISTER NAME	ATTRIBUTES	DESCRIPTION
for a given Controller (Flexys series) using SELPRO	PS1_AI4_RTD_PV0	R	Process values for CH0 ~ CH3
programming software.	PS1_AI4_RTD_PV1	R	At Sensor break /
For details of the software and configuration method, please refer to the software manual. 2. Auto generated FL-SC-AI04-RTD registers in SELPRO software : Example : FL-SC-AI04-RTD card is	PS1_AI4_RTD_PV2	R	Sensor reverse / Over range /
	PS1_AI4_RTD_PV3	R	Under range condition : PS1_AI4_RTD_PVx = 0
	PS1_AI4_RTD_PVS0	R	Process value status for CH0 ~ CH3 At Sensor break / Over range condition : PS1_AI4_RTD_PVSx = 2
	PS1_AI4_RTD_PVS1	R	
configured in Flexys series via SELPRO software in slot number 1.	PS1_AI4_RTD_PVS2	R	At Sensor reverse / Under range condition : PS1 AI4 RTD PVSx = 1
R : Read only ; Where x = 0 to 3	PS1_AI4_RTD_PVS3	R	Otherwise : PS1_AI4_RTD_PVSx = 0

5. TYPICAL WIRING DIAGRAM



DESCRIPTION

Analog Input (RTD-PT100)

	101_
· · ·	
6. SAFETY SUMMAR	Y
0. 0/11 2111 0011111/111	

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

ORDER CODE

FL-SC-AI04-RTD-CE

This device contains no user serviceable parts and requires special equipment and specialized engineers for repair.

CERTIFICATION

CE

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Doc. name : OP INST FL-SC-AI04-RTD RoHS

OP422-V02(Page 2 of 2)

selec

V02

OP422

1. PRODUCT PROFILE



Figure 1.1 : Front view

3. ELECTRICAL SPECIFICATIONS					
Number of Channels per card	4 Channels				
Sensor type	PT100				
Measurement Range	-100°C to 850°C				
Type of input	Non-Differential				
Temperature resolution	0.1°C				
Input impedance in signal range	510 κΩ				
Analog input error at 25°C	0.1 % of full scale ± 1°C				
Absolute input range	NA				
Non linearity	0.1 % of full scale ± 1°C				
Conversion time	100 ms				
Protection against polarity inversion	NA				
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				

Doc. name : OP INST FL-SC-AI04-RTD RoHS

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

not as an independent module.Easy to connect and replaceReal-time channel sampling

FL-SC-AI04-RTD card as shown in Figure 1.1 is used as a plug-in module in Flexys series and

2. DESCRIPTION

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FL-SC-AI04-RTD

Operating Instructions

4.00110/012					
	SC-AI04-TC card	REGISTE	R NAME	ATTRIBUTES	DESCRIPTION
for a given controller (Flexys series) using SELPRO programming software.		PS1_AI4_	FC_SEN0	R/W	Concer number for
		PS1_AI4_		R/W	Sensor number for CH0 ~ CH3
	For details of the software and		FC_SEN2	R/W	NOTE : Refer software user
configuration method, please refer to the software manual. 2. Auto generated FL-SC-AI04-TC registers in SELPRO software :		PS1_AI4_	FC_SEN3	R/W	manual for sensor number.
		PS1_AI4_		R	Process values for
		PS1_AI4_		R	CH0 ~ CH3 At Sensor break / Sensor reverse / Over range /
		PS1_AI4_		R	Under range condition :
Example :		PS1_AI4_	FC_PV3	R	PS1_AI4_TC_PVx = 0
	Flexys series via	PS1_AI4_	TC_PVS0	R	Process value status for CH0 ~ CH3 At Sensor break /
SELPRO soft	ware in slot number 1.	PS1_AI4_	TC_PVS1	R	Over range condition : PS1_AI4_TC_PVSx = 2
		PS1_AI4_	TC_PVS2	R	At Sensor reverse / Under range condition : PS1_AI4_TC_PVSx = 1
R/W : Read/W R : Read only	/rite ; ; Where x = 0 to 3	PS1_AI4_	TC_PVS3	R	Otherwise : PS1_AI4_TC_PVSx = 0
5. TYPICAL WIR	ING DIAGRAM		6. SA	FETY SUMMAR	Y
$ \begin{array}{c} CH0 \left\{ \begin{array}{c} + & - & + \\ - & - & - \\ \end{array} \right. \\ CH1 \left\{ \begin{array}{c} + & - & + \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} + & - & + \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} + & - & + \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} + & - & + \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} + & - & + \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} + & - & + \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} + & - & + \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right. \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - \\ \\ CH2 \left\{ \begin{array}{c} - & - & - \\ - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - & - \\ \\ CH2 \left\{ \begin{array}{c} - & - \\ \\ CH2 \left\{ \begin{array}{c} - & - \\ - & - \\ \end{array} \right\} \\ CH2 \left\{ \begin{array}{c} - & - \\ \\ CH2 $			term mar	ninal layout provi nual. : For safety prec	K-X / FL-RL-BS-6
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FL-SC-AI04-TC-CE	Current Output (0-20mA)			uent editions.	orrections are included in
? SERVICE D	? 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 s	(Specifications are subject to change, since development is a continuous process.)				
Selec Controls Pvt. Ltd., India					

Factory Address :

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Tel. No. : +91-22-41 418 419/430 | Fax No. : +91-22-28471733 | Toll free : 1800 227 353(BSNL/MTNL Subscribers only) Website : www.selec.com | Email : sales@selec.com

Doc. name : OP INST FL-SC-AI04-TC RoHS

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OP474-V02

1. PRODUCT PROFILE



Doc. name : OP INST FL-SC-AI04-TC RoHS

Figure 1.1 : Front view

3. ELECTRICAL SPECIFICATIONS					
Number of Channels per card	4 Channels				
Sensor type	J, K, T, R, S, C, E, B, N, L, U, W, PLATINEL II, MILLIVOLT (-5 to 65mV)				
Measurement Range	As per sensor selection				
Type of input	Non-Differential				
Temperature resolution	0.1°C				
Digital resolution for MILLIVOLT	14 bits				
Input impedance in signal range	330 kΩ				
Analog input error at 25°C	0.25 % of full scale ± 1°C				
Absolute input range	5 V				
Non linearity	0.25 % of full scale ± 1°C				
Conversion time	100 ms				
Protection against polarity inversion	Yes				
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				

2. DESCRIPTION

> FL-SC-AI04-TC card as shown in Figure 1.1 is used as a plug-in module in Flexys series and not as an independent module.

FL-SC-AI04-TC

Operating Instructions

- > Easy to connect and replace
- > Real-time channel sampling

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

1. Configure FL-SC-AI03-NTC-AI03-I card for a given Controller (Flexys	REGISTER NAME	ATTRIBUTES	DESCRIPTION
series)using SELPRO programming	PS1_AINTC3_PV0	R	
software. For details of the software	PS1_AINTC3_PV1	R	Process Values
and configuration method, please	PS1_AINTC3_PV2	R	for CH0 ~ CH5 At Over range /
refer to the software manual.	PS1_AINTC3_PV3	R	Under range condition :
2. Auto generated FL-SC-AI03-NTC-	PS1_AINTC3_PV4	R	$PS1_AINTC3_PVx = 0$
AI03-I registers in SELPRO software : Example : FL-SC-AI03-NTC-AI03-I card is	PS1_AINTC3_PV5	R	
	PS1_AINTC3_PVS0	R	Process value status
	PS1_AINTC3_PVS1	R	for CH0 ~ CH5 At Over range condition :
configured in Flexys series via	PS1_AINTC3_PVS2	R	PS1_AINTC3_PVSx = 2
SELPRO	PS1_AINTC3_PVS3	R	At Under range condition :
	PS1_AINTC3_PVS4	R	PS1_AINTC3_PVSx = 1 Otherwise :
R : Read only ; Where x = 0 to 5	PS1_AINTC3_PVS5	R	PS1_AINTC3_PVSx = 0

5. TYPICAL WIRING DIAGRAM

6	SAFETY	SUM	ΛARΥ
		001111	

- 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 :

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Doc. name : OP INST FL-SC-AI03-NTC-AI03-I

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OP644-V01

1. PRODUCT PROFILE



Figure 1.1 : Front view

3. ELECTRICAL SPECIFICATIONS

	NTC	CURRENT
Number of Channels per card	3 Channels	3 Channels
Measurement Range	-40 ° to 95 °C	0-20mA
Type of input	NA	Non-Differential
Digital resolution	14 bits	
Input impedance in signal range	NA	100°
Analog input error at 25°C	\pm 0.25 % of full scale \pm 1 $^{\rm 0}C$	± 0.25 % of full scale
Max input	NA	+ 50mA
Non linearity	\pm 0.25 % of full scale \pm 1 $^{\rm 0}C$	± 0.25 % of full scale
Conversion time	100 ms	
Protection against polarity inversion	Yes	
Under range value	< -40°C	< -2mA
Over range value	> 95°C	> +22mA
Channel isolation	No	
Operating Temperature	0° to 55°C	
Storage Temperature	-20° to 70°C	
Humidity	95%	
Connector	Spring type pluggable terminal block (3.50 mm pitch)	
Weight (g)	40	

FL-SC-AI03-NTC-AI03-I

Operating Instructions

2. DESCRIPTION

 FL-SC-AI03-NTC-AI03-I card as shown in Figure 1.1is used as a plug-in module in Flexys series and not as an independent module.
 Easy to connect and replace

- Scaling to engineering units
- > Real-time channel sampling

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

OP644-V01(Page 1 of 2)



FL-SC-AI04-U

Operating Instructions

2. DESCRIPTION

- FL-SC-AI04-U card as shown in figure 1.1 is used as a plug - in module in Flexys Series, EXP FLEX 2M, and not as an independent module
- Easy to connect and replace
- Scaling to engineering units

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

3. ELECTRICAL SPECIFICATIONS

-21

Figure 1.1 : Front view

Number of Analog Input Channels	4
Conversion time	100 ms
Channel isolation	No
Operating Temerature	0 to 55°C
Storage Teperature	-20 to 70°C
Humidity	95.00%
Connector	Spring type pluggable terminal Block (3.5mm pitch)
Weight	39.0
	Conversion time Channel isolation Operating Temerature Storage Teperature Humidity Connector

ANALOG INPUT

OP565-V01

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 Impdance in signal range	330K Q	100 Ω	470K Ω	470K Ω
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

1. Configure FL-SC-AI04-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-AI04-U registers in SELPRO software :

3. Sensor type initialized at power ON

Example : FL-SC-AI04-U card is configured in Flexys series via SELPRO software in Slot number 1.

Register Name	Attributes	Description
PS1_AI4_U_SEN0	R/W	Sensor Selection
PS1_AI4_U_SEN1	R/W	PS1_AI4_U_SENx = 0 -12 (TC) PS1_AI4_U_SENx =13 (RTD)
PS1_AI4_U_SEN2	R/W	PS1_AI4_U_SENx =14 (mV) PS1_AI4_U_SENx =15 (V)
PS1_AI4_U_SEN3	R/W	PS1_AI4_U_SENx =16 (I)
PS1_AI4_U_PV0	R	Process values for CH0- CH3
PS1_AI4_U_PV1	R	At Sensor break / Sensor reverse / Over
PS1_AI4_U_PV2	R	range / Under range : PS1 Al4 U PVx = 0
PS1_AI4_U_PV3	R	
PS1_AI4_U_PVS0	R	Process value status for CH0 - CH3
PS1_AI4_U_PVS1	R	At Sensor break / Over range condition : PS1 Al4 U PVSx = 2
PS1_AI4_U_PVS2	R	At Sensor reverse/ Under range condition PS1 AI4 U PVSx = 1
PS1_AI4_U_PVS3	R	Otherwise when Sensor OK : PS1_AI4_U_PVSx = 0

R : Read only, R/W : Read / Write Where x = 0 to 3

5. TYPICAL WIRING DIAGRAM



Figure 1.2 : Wiring Diagram





Figure 1.3 : Top view (Jumper Selection)

Analog Input		
Sensor type	Jumper selection	Jumper no.
TC / RTD	Short pin 1 & pin 2	
Current	Short pin 2 & pin 3	JP1,JP2,JP3,JP4 for CH0, CH1, CH2,CH3 resp.
Voltage	Short pin 4 & pin 5	

NOTE : Default jumper selections is TC/RTD (i.e.pin 1 & pin 2) for Analog Input

7. 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.

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. Tel. No. : +91-22-41 418 419/430 | Fax No. : +91-22-28471733 I Toll free : 1800 227 353 (BSNL/MTNL Subscribers only) Website : www.selec.com | Email : sales@selec.com

Doc. name : OP INST FL-SC-AI04-U

OP565-V01(Page 2 of 2)

0	C-AIDF04-TC card	REGISTER NAM	IE ATTRIBUTES	DESCRIPTION	
series) using SELPRO programming software. For details of the software and configuration method, please refer to the software manual.		PS1_AI4_TC_SE	N0 R/W	Sensor number for CH0 ~ CH3 NOTE : Refer software user manual for sensor number. Process values for	
		PS1_AI4_TC_SE	N1 R/W		
		PS1_AI4_TC_SE	N2 R/W		
		PS1_AI4_TC_SE			
		PS1_AI4_TC_PV			
2. Auto generated	FL-SC-AIDF04-TC	PS1_AI4_TC_PV		CH0 ~ CH3 At Sensor break / Sensor reverse / Over range /	
•	_PRO software :	PS1_AI4_TC_PV		Under range condition :	
Example :	4 70 1	PS1_AI4_TC_PV	'3 R	PS1_AI4_TC_PVx = 0	
FL-SC-AIDF04 configured in Fl	lexys series via	PS1_AI4_TC_PV	SO R	Process value status for CH0 ~ CH3 At Sensor break /	
SELPRO softw	are in slot number 1.	PS1_AI4_TC_PV	S1 R	Over range condition : PS1_AI4_TC_PVSx = 2	
		PS1_AI4_TC_PV	S2 R	At Sensor reverse / Under range condition : PS1_AI4_TC_PVSx = 1	
R/W : Read/Wr R : Read only ;	ite ; Where x = 0 to 3	PS1_AI4_TC_PV	'S3 R	Otherwise : PS1_AI4_TC_PVSx = 0	
Figure 4.1 : FL-SC-AIDF04-TC-	CH3 { + + C CH3 { + + C NTC + C NTC C CE wiring	>	manual. ITE : For safety pred FL-TX4-LG-X- operating instr ISCLAIMER LIABIL	X-X / FL-RL-BS-6-CE uction	
7. ORDER CODE I	NFORMATION				
ORDER CODE					
FL-SC-AIDF04- TC-CE	DESCRIPTION CER C (TC Analog input	cultus usted usted usted usted	ensure consistency v scribed. Since var irely, we cannot wever the informatio	the contents of this publicatio with the hardware and softwar iance cannot be preclude guarantee full consistence n in this publication is reviewe corrections are included i	
	TC Analog input	cultus usted usted usted usted	ensure consistency we scribed. Since var irely, we cannot wever the informatio d any necessary	with the hardware and softwa iance cannot be preclude guarantee full consistence n in this publication is reviewed	

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Tel. No. : +91-22-41 418 419/430 | Fax No. : +91-22-28471733 | Toll free : 1800 227 353(BSNL/MTNL Subscribers only) Website : www.selec.com | Email : sales@selec.com

Doc. name : OP INST FL-SC-AIDF04-TC-CE

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OP476-V02

1. PRODUCT PROFILE



Figure 1.1 : Front view

-			
3. ELECTRICAL SPECIFICATIONS			
Number of Channels per card	4 Channels		
Sensor type	J, K, T, R, S, C, E, B, N, L, U, W, PLATINEL II, MILLIVOLT (-5 to 65mV)		
Measurement Range	As per sensor selection		
Type of input	Differential		
Temperature resolution	0.1°C		
Digital resolution for MILLIVOLT	14 bits		
Input impedance in signal range	15 ΜΩ		
Analog input error at 25°C	0.15 % of full scale ± 1°C		
Absolute input range	5 V		
Non linearity	0.15 % of full scale ± 1°C		
Conversion time	300 ms		
Protection against polarity inversion	Yes		
Channel isolation	Yes		
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		

Operating Instructions 2. DESCRIPTION

FL-SC-AIDF04-TC-CE card as shown in Figure 1.1 is used as a plug-in module in Flexys series and not as an independent module.

FL-SC-AIDF04-TC

- > Easy to connect and replace
- > Real-time channel sampling
- NOTE : For installation procedure, refer FL-TX4-LG-X-X-X / FL-RL-BS-6-CE Operating instruction.

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.

Tel. No. : +91-22-4148 419/430 | Fax No. : +91-22-28471733 | Toll free : 1800 227 353 (BSNL/MTNL Subscribers only) Website : www.selec.com | Email : sales@selec.com

Doc. name : OP INST FL-SC-LC04

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OP439-V01



Figure 1.1 : Front view	~
3. ELECTRICAL SPECIFICATI	DNS
No of Channels per card	4 Channels
Input signal range	±19.5mV, ±39 mV, ±1.25 V, ±2.5 V (selectable)
Excitation Output Voltage	5V DC ±10%
Type of input	Differential
Digital resolution	24 bits
Applicable sensor type	4 - wire –
Input Offset Drift	100 nV/ °C
Temperature coefficient Span	±2.5 ppm/ °C
Linearity error	±0.05% of full scale reading
Gain Error	0.1%
Gain Drift	3 ppm/ °C
Conversion method	Delta Sigma
Conversion time	50 ms to 400 ms (user configurable)
Permitted load cell resistance	350 Ω
Common mode rejection (CMRR @50/60 Hz)	≥ 100 dB
Operating Temperature	0 to 55°C
Storage Temperature	-20 to 70°C
Humidity	95.00%
Connector	Spring type pluggable terminal block (5.08 mm pitch)
Weight (g)	40

FL-SC-LC04

Operating Instructions

2. DESCRIPTION

- > FL-SC-LC04 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
- > Scaling to engineering units
- > Real-time channel sampling

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

4. TYPICAL WIRING DIAGRAM



5. CALIBRATION PROCEDURE

Step 1 : CARD CONFIGURATION

R : Read only ; R/W : Read/Write

- NOTE : The FL-SC-LC04 card has to be calibrated along with the sensor implemented in the setup. The calibration will remain valid to the same sensor and shall be re calibrated if sensor is changed/replaced.
- 1. Configure FL-SC-LC04 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 Loadcell registers in SELPRO software :

Example : FL-SC-LC04 card is configured in Flexys series via SELPRO software in Slot number 1.

REGISTER NAME	ATTRIBUTES	DESCRIPTION	
PS1_LC_GS_CH0	R/W		
PS1_LC_GS_CH1	R/W	Set Gain value of CH0 ~ CH3. Default = 0	
PS1_LC_GS_CH2	R/W	Set Gain Value of Child ~ Child, Delault = 0	
PS1_LC_GS_CH3	R/W	1	
PS1_LC_TrTrgr_CH0	R/W		
PS1_LC_TrTrgr_CH1	R/W	Trigger bit of CH0 ~ CH3 for tare	
PS1_LC_TrTrgr_CH2	R/W	(to set present weight = 0)	
PS1_LC_TrTrgr_CH3	R/W		
PS1_LC_WT_CH0	R		
PS1_LC_WT_CH1	R	Present weight of CH0 ~ CH3	
PS1_LC_WT_CH2	R		
PS1_LC_WT_CH3	R		
PS1_LC_CS_CH0	R/W		
PS1_LC_CS_CH1	R/W	Trigger bit of CH0 ~ CH3 for Conversion speed selection	
PS1_LC_CS_CH2	R/W		
PS1_LC_CS_CH3	R/W		
PS1_LC_Span_WT_CH0	R/W		
PS1_LC_Span_WT_CH1	R/W	Sat Span weight input of CH0 CH2 for activities and	
PS1_LC_Span_WT_CH2	R/W	Set Span weight input of CH0 ~ CH3 for calibration only	
PS1_LC_Span_WT_CH3	R/W		
Doc. name : OP INST FL-SC	C-LC04	OP439-V01(Page 2 of 4	

Step 2 : GAIN SELECTION

2

3

Maximum Loadcell Output at rated Load = Rated Output x Excitation Output voltage. Example : Rated Output = 2 mV/V

Excitation Output Voltage = 5 V

So, Maximum Loadcell Output at Rated Load = +10 mV

Calculated Loadcell Output ≤ Max. Differential input. (See the table below) Ther

64

128

Therefore, Gain (LC_GS_CHx) = 3 selected.			
LC_GS_CHx	PGA (Programmable Gain Amplifier)	Max. Differential input	
0	1	+/- 2.5 V	
1	2	+/- 1.25 V	

Step 3 : CONVERSION SPEED SELECTION

LC_CS_CHx	Conversion time/channel
0	100 ms
1	12.5 ms

Conversion Speed Calculation :

LC_CS_CH0	LC_CS_CH1	LC_CS_CH2	LC_CS_CH3	CH0 Response time
0	0	0	0	100 ms x 4 = 400 ms
1	1	1	1	12.5 ms x 4 = 50 ms
1	0	0	0	12.5 ms + (100 ms x 3) = 312.5 ms
1	1	1	0	(12.5 ms x 3) + 100 ms = 137.5 ms

NOTE : Set common conversion speed for all channel for better accuracy via SELPRO software.

Step 4 : CALIBRATION

- EN ENO CB AN SN CHNO CD -cv Zero Calibration 1) Set SN = 1 (Slot Number) 2) Set CD = 0 3) Remove weight 4) Trigger EN pin 5) Observe present weight in PS1_LC_WT_CH0 6) Zero calibration done Span Calibration 7) Set CD=1 8) Put max. known weight on sensor 9) Set PS1_LC_SPAN_WT_CH0 = counts required against known weight Example : Max. known weight = 1 kg 10) Trigger EN pin 12) Span weight calibration done

Assign CALBANALOG block for calibration as shown, in SELPRO software. Now, Download the configuration in to Controller.

NOTE : During Calibration, set LC_TrTrgr_CHx=0

Abbreviation	Explanation		
SN	Slot Number where the Load cell card is configured		
CHNO	Channel number which is to be calibrated		
CD	Calibration Code : 0 = to calibrate at Zero weight 1 = to calibrate at Span weight		
CV	NA for Loadcell		

Set PS1_LC_SPAN_WT_CH0 = 1000; if 1 g resolution is required

Set PS1_LC_SPAN_WT_CH0 = 1000000; if 1 mg resolution is required

NOTE : Span counts should not exceed digital resolution of FL-SC-LC04

11) Observe present weight in PS1_LC_WT_CH0

Doc. name : OP INST FL-SC-LC04

where x = 0.123

+/- 39 mV

+/- 19.5 mV