6 Control Connections

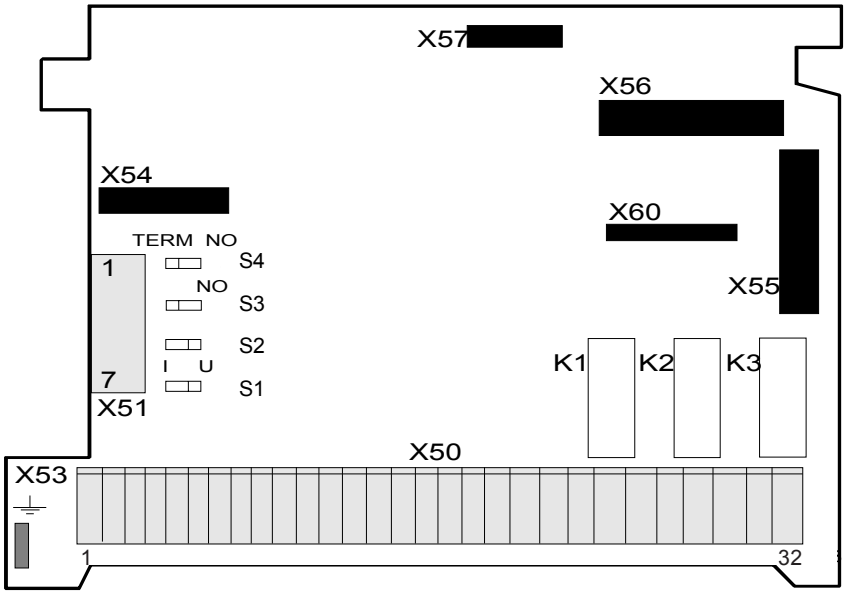


Figure 6-1. Control Interface Card SNAT 7640.

The Analogue Input signal selection is done with jumpers S1 (AI1) and S2 (AI2): I = 0(4) - 20 mA, V = 0(2) - 10 V.

X50 = screw terminal, X53 = earthing connector, X54 = connection to Motor Control Card, X55 and X56 = option card connectors.

X51 for RS 485 connection. Jumpers S3 and S4 are set to TERM in the last SAMI GS unit of a RS 485 chain.

The available control places for SAMI GS are:

a) Keypad (see Section 7, page 24)

b) The X50 screw terminal on the Control Interface Card SNAT 7600/7640 in the Control Unit (This terminal may have been routed to the optional Terminal Block X2 in the cabinet outside the Control Unit).

c) The RS 485 serial communication bus; terminal X51 on Control Interface Card (This terminal may have been routed to the optional Terminal Block X2 in the cabinet outside the Control Unit).

External control devices, for example a PLC or a remote control panel SACE 11 PAN, are connected to the screw terminal X50 according to the connection diagram of each Application Macro. The connection diagrams for Application Macros are presented in the Application Macro Manual.

The X50 connection diagram based on factory settings is presented in Section 6.2 on page 23. The terminal functions can be altered by means of parameter settings (refer to Section 9).

Some basic functions are selected by setting the jumpers on the Control Interface Card. Refer to Figure 6-1.

The Control Interface Card is accessible after removing the front cover of the Control Unit. To remove the cover, loosen slightly the four screws on the top and bottom of the cover.

6.1 Control Cables

Control cables for the SAMI GS should be 0.5 - 1.0 mm^2 screened, multi-core cables, if they are connected to the terminals on the Control Interface Card. Cables up to 4 mm^2 may be used if the optional Terminal Block X2 is used.

The the cable screens should be earthed at the TE terminal of the Control Unit.

When planning the cabling between the SAMI GS and an automation device, such as a PLC, attention should be given to interference suppression, signal levels, galvanic isolation, etc. The cables should be separated from the mains and motor cables and not running in parallel with them (minimum separation 300 mm if parallel run $\leq$ 10 m; add 300 mm for every 10 m). There should be no additional control components (contactors or relays) inside the SAMI GS and no control cables other than those of the SAMI GS.

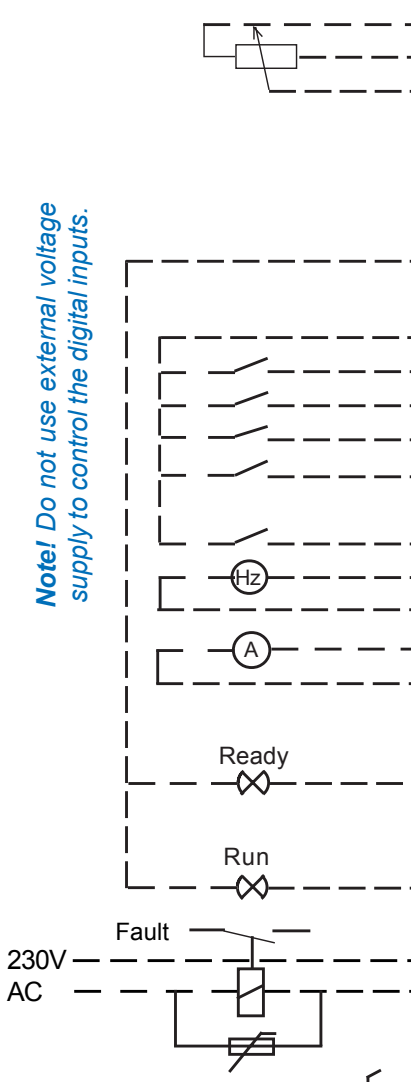
The control connections of the SAMI GS are galvanically isolated from mains potential and have a 10 MΩ resistance from the inverter frame i.e. PE. Because of this, there is no need to connect X50/2,4,6 and 8 (logic GND) to TE or PE. However, if EMC problems occur it could prove useful to do this.

Analogue input and output signals:
A separate twisted pair must always be used for each individual signal.
Digital inputs:
It is strongly recommended to use screened cables for digital inputs (DI). An external + 24 V supply for the digital inputs (DI1 to DI6) must not be used.

Relay outputs:
If relay outputs (RO) operate on 24 V DC, the signals can be routed to the same cable used for the digital inputs. If twisted cables are used, digital output and input should never be in the same pair. If 110 V/230 V AC is connected to a relay output, a separate cable without screen can be used for these signals.

Note! If the relay outputs are used to control inductive loads (e.g. relays, contactors) they must be protected by using varistors or RC units (AC) or a diode (DC). The protection components should be installed onto the coil of the relay or contactor being controlled and not on the terminals of X50. When using an RC unit, the leakage current of the RC circuit must be less than the holding current of the controlled contactor or relay.

6.2 Connections of the Control Interface Card SNAT 7600/7640 (factory settings).



Terminal X50		Function
1	REF	Reference voltage 10 V DC
2	GND 2	max. 10 mA 1 kΩ ≤ R ≤ 10 kΩ
3	AI 1+	Reference signal
4	AI 1-	0 V - 10 V or 0 mA - 20 mA [1]
5	AI 2+	Not specified in this application
6	AI 2-	2 V - 10 V or 4 mA - 20 mA [1]
7	SPL	Aux. voltage output 24 V DC
8	GND 2	max. 200 mA (total of term. 7&10)
9	N.C.	Not connected
10	SPL	+24 V max. 200 mA (total of 7&10)
11	DI 1	START/STOP
12	DI 2	Direction
13	DI 3	Constant speed selection [2]
14	DI 4	Constant speed selection [2]
15	DI 5	Not specified in this application
16	DI 6	Acceleration/Deceleration 1 or 2
17	AO 1+	Output frequency
18	AO 1-	0 ... 20 mA <-> 0 ... 50 Hz
19	AO 2+	Motor current
20	AO 2-	0 ... 20 mA <-> 0 ... I_N
21	RO 11	Relay output 1
22	RO 12	READY indication
23	RO 13	
24	RO 21	Relay output 2
25	RO 22	RUN indication
26	RO 23	
27	RO 31	Relay output 3
28	RO 32	FAULT indication
29	RO 33	

Terminal X51		Function
1	+8 V	Power to remote panel
2	GND2	
3	SCRN1	RS 485 serial link connections
4	GND3	
5	SGNA	
6	SGNB	
7	SCRN2	

see page 49

1) Select voltage or current reference with jumpers S1 and S2 on the Control Interface Card (located besides the terminal X51).
2) Refer to parameter 11.7. CONST SPEED SEL on page 42.