

# 6 channels Spectrometric Amplifier.

# DSDIG60 module.

**Operation Manual.** 

### WARRANTY

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NAICAM SRL warrants the following items for one year from the date of shipment: probes, cables, and documentation of specified equipment.

During the warranty period, we will, at our option, either repair or replace any product that proves to be defective.

To exercise this warranty, write or call your local NAICAM SRL representative, or contact NAICAM SRL headquarters in Italy. You will be given prompt assistance and return instructions. Send the product, transportation prepaid, to the indicated service facility. Repairs will be made and the product returned, transportation prepaid. Repaired or replaced products are warranted for the balance of the original warranty period.

#### LIMITATION OF WARRANTY

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6 channels spectrometric amplifier.



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NAICAM

**DSDIG60** 

#### 1. GENERAL DESCRIPTION.

#### **1.1. DESCRIPTION. FUNCTIONAL BLOCK DIAGRAM.**

The DSDIG60 desktop single module has up to 6 channels SDIG60 spectrometric amplifier. Each channel has gain 60 dB, zero pole, differential and integration circuits (fig.1). The timing of circuit has been choused for best signal to noise resolution for specific application with CA05 preamplifier. The spectrometric chain CA05 preamplifier and SDIG60 give equivalent noise about 200 electrons. Input equivalent noise of shaper for 3us (integration) and 3us (differential)) signal time constant is less than 7 uV





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## **1.2. PERFORMANCE.**

INPUT AMPLITUDI	Ξ
RANGE	Maximum input range 0 to $\pm 30$ mV; positive or negative polarity; input amplitude; protected to $\pm 6$ V dc; impedance 10 k $\Omega$ , DC coupled. The range can be changed according to custom request).
OUTPUT AMPLITU RANGE	DE Unipolar non inverted. Amplitude of output signal 0 to $\pm 10$ V
	(without termination). Output impedance $Zo = 100 \Omega$ . Output Offset voltage less than +/- 2 mV. The output can be terminated to 50- $\Omega$ load.
NOISE RMS	less than $\leq 7 \ \mu V$ .
RISE TIME	1,9 us.
FALL TIME	9,8 us.
NONLINEARITY	$\leq \pm 0.05\%$ not over $\pm 10$ V range. Variation of nonlinearity in over range signal is less then 0,1%.
TEMPERATURE INSTABILITY DC	Level $\leq \pm 25 \ \mu V/C$ referred to the output (in range 0 to 50°C ).
COARSE GAIN	1000.
FINE GAIN	+/-20% by 25 turns trimmer. Corresponding hole for access to trimmer user can find on the top of the module.
GAIN STABILITY	less then 0,01 %/C in full range.
POLE ZERO ADJ	25-turn Trimmer. Adjustment to compensate for the preamplifier decay time constant from 25us to $\infty$ .
Output Offset ADJ	14-turn Trimmer.
TIME CONSTANT	Two stage integrate RC time constants- 3 us.Differentiate RC time constant- 3 us.

Note:

The RC time can be adjusted in fabric according user request.

#### **1.3. INPUT/OUTPUT CONNECTIONS AND SIGNAL CHARACTERISTIC.**

For all inputs and outputs connections coaxial cable RG178 is used (output signals, test pulses and power supply voltages). This solution permit avoids cross talk between channels and loop connections. The table 1 and 2 show connector DSUB 15 and DSUB 25 pin out.

Description	PIN	Description	PIN
S1.1 Input CH1.1	8	S2.1 Input CH1.1	5
G1.1 GND CH1.1	15	G2.1 GND CH1.1	13
S1.2 Input CH1.1	14	S2.2 Input CH2.2	12
G1.2 GND CH1.1	7	G1.1 GND CH1.1	4
NC	3,6, 11	Reserved but not used	1,2,9,10

Table 1. DSUB	15 connector	pinout (2	or 4 channels).
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**DSDIG60** 

Figure 2. DSUB15 Preamplifiers Input connector.



Figure 3. DSUB15 Power and test pulse connector. The -6 Volt for preamplifiers can be changed to -4 Volt (specified in order).

Table 2. DSUB25 connector pinout (6 channels).

Description	PIN	Description	PIN
S1.1 Input CH1.1	12	S2.2 Input CH2.2	19
G1.1 GND CH1.1	25	G2.2 GND CH1.1	7
S1.2 Input CH1.1	23	S3.1 Input CH2.2	5
G1.2 GND CH1.1	11	G3.1 GND CH1.1	17
S2.1 Input CH1.1	9	S3.2 Input CH2.2	15
G2.1 GND CH1.1	21	G3.2 GND CH1.1	3
NC	12,10,8,6,4,2,1	NC	24,22,20,18,16,14



Figure 4. DSUB25 Preamplifiers Input connector.



Figure 5. DSUB25 Power and test pulse connector. The -6 Volt for preamplifiers can be changed to -4 Volt (specified in order).



Figure 6. DSUB9 Power connector.

## **1.4. POWER SUPPLY REQUIREMENTS:**

Table 3.

P. Voltage (V)	Current (mA)
+12	55 x N +10
-12	55 x N +10

Note: N – number of channels

# **1.5 DIMENSIONS:**

160x165x51 mm

WEIGHT: not more than 750 g.



For More information on NAICAM products and applications contact your local NAICAM representative:

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