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OVERALL SPECIFICATIONS FOR
LOW-SPEED, INTEGRATING DIFFERENTIAL ANALOG INPUT UNIT

(Preliminary)

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1. GENERAL

The ANALOG INPUT UNIT accomplishes the connection between the RC 4000 DATA PROCESSING EQUIPMENT and the process parameters represented by analog voltages from different kinds of transducers.

It includes the following types of equipment, the scope of which is defined in the relevant configuration-description:

- Analog Input Controller and A/D-Converter, AIC 402
- Multiplexer Address Decoder, MAD 401
- Multigain Amplifier, AMP 402
- Analog Multiplexer, MPA 401

2. OVERALL SPECIFICATIONS FOR ANALOG INPUT UNIT

Max. number of Analog Input
Channels within one Analog
Input Unit:

1024

Type of Input Channels:

Voltage, differential

Input Impedance:

Differential mode: min. 10,000 Mohm
Common mode: min. 10,000 Mohm

Input Current:

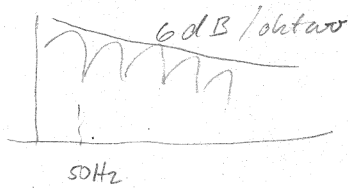
Differential mode: max. 0.5 nA
Common mode: max. 1.0 nA

Common Mode Rejection

Ratio at 50 cps:

$60 \text{ dB} + 20 \log (10/\text{analog range (volts)})$
or 110 dB, whichever is less

Normal Mode Rejection:



ved exakt 50Hz
46 dB at 50 cps (or multiples) \pm 1 per cent

Optional: One low-pass filter per input channel *Am befales hvis signal/støj forsk. er ekstremt dårligt (signal & støj > 10% af range)*
For detailed specification, see separate specification sheet.

Max. Input Voltage with specified Common Mode Rejection (ref. to system ground):

\pm 13.5 volts, peak (either side)

Overvoltage Protection for max. 220 V rms.:

2 fuses and
4 diodes per channel

Max. Number of Analog Input Ranges:

4 within 10 volts full scale thru \pm 10 mV full scale (must be selected by the customer in due time)

Range Identification:

Range address No. 0 thru 3, where 0 identifies lowest range and 3 highest range.

Connection to RC 4000, CPU:

via low-speed Data Channel (I/O- instruction with predetermined device address)

I/O Commands used for Data-Transfer:

Control: Range and Channel address
Sense: Status and converted analog signal

Format of Control Information: (Control command)

1 byte transferred from selected W-register, bit 12:23. Integer given by:
 $a \times 1024 + b$, where
a = range No. (0 thru 3)
b = channel address (0 thru 1023)

Format of Status/Data Information:
(Sense command)

1 word transferred to selected W-register
bit 0:23 :
Bit 0 = 0
Bit 1 = Parity Error (range overflow)
Bit 2:11 = 0
Bit 12:23 = Converted analog value

Time-Interval from Control Command to end of A/D Conversion:

min : 23 ms
max : 43 ms
(depending on input signal level)

A/D Converter Type:

Dual-slope, integrating

Format of Converted Analog Value:

12-bit binary, negative values given as 2-complements

Scale Factor:

± 2048 corresponds to \pm full scale signals of selected analog input range.

Overall Accuracy at a 99.9 per cent Confidence Level, and at 25 deg. C:

*reference to
see VB 881*
 ± 0.15 per cent of full scale or ± 20 microvolts ref. to input, whichever is greater ± 1 least significant bit

Max. Temperature Coefficient:

(± 1 microvolt ref. to input ± 30 ppm) per deg. C.

Supply Voltages:

+5 V DC ± 5 per cent
+12 V DC ± 5 per cent
-6 V DC ± 5 per cent
+24 V DC ± 2 per cent
-24 V DC ± 2 per cent

Ambient Air:

Temperature: 0 to 45 deg. C
Relative Humidity: 30 to 70 per cent