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Author: V. Toft Pedersen
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OVERALL SPECIFICATIONS FOR

MEDIUM-SPEED, DIFFERENTIAL ANALOG INPUT UNIT

(Preliminary)

A/S REGNECENTRALEN
Falkoneralle 1
DK 2000 Copenhagen F

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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 401
- 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 Mohms
	Common mode:	min. 10,000 Mohms
Input Current:	Differential mode:	max. 0.5 nA
	Common mode:	max. 1.0 nA
Common Mode Rejection Ratio at 50 cps:	[60 dB + 20 log (10/analog range (volts))] or 110 dB, whichever is less	

Max. Source Impedance 1000 ohms

Normal Mode Noise Rejection:	One low-pass filter per input channel required for input ranges of ±1 volt or lower. For detailed specification, see separate specification sheet.
Max. Input Voltage with specified Common Mode Rejection (ref. to system ground):	±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 ±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 (amplifier overload) Bit 2:11 = 0 Bit 12:23 = Converted analog value
Time-Interval from Control Command to end of A/D Conversion:	[130 + 5/analog range (volts)] microseconds for as well unipolar as bipolar signals.
A/D Converter Type:	Successive approximation
Format of Converted Analog Value:	12-bit binary, negative values given as 2-complements
Scale Factor:	±2048 corresponds to ± full scale signals of selected analog input range.
Overall Accuracy at a 99.7 per cent Confidence Level, and at 25 deg. C:	incl. mpx + forst. + ADC ±0.~~15~~ 25 per cent of full scale ~~or ±20 microvolts ref. to input, whichever is greater~~ ±1 least significant bit
Max. Temperature Coefficient:	(~~±1.5~~ ±2 microvolt ref. to input ~~±30 ppm~~ per degree C) ~~per deg. C.~~ ±0.003% of full scale
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