LAMPIRAN
1. INTRODUCTION

PIACS DC mk.3 is a versatile control unit for a complete precipitator bus-section, including facilities for integrated, intelligent control of:
- HV-energisation of the discharge electrodes by a T/R-set,
- Rapping gears or vibrators for cleaning electrodes or screens,
- Heaters for supporting insulators, insulator shafts and bottom hoppers.

PIACS DC is a microprocessor based unit with dedicated interface to the precipitator bus-section.
A consistent user interface is provided for easy operation of the various functions included.

Key features and facilities:
- Intermittent energisation - Nec
- Automatic optimisation of corona power by:
  - Nec optimisation according to patented Back Corona - detection
  - I DC mean current level optimisation acc. to Current Voltage Characteristic – CVC
- Advanced control in transition periods caused by varying process conditions
  - Frequent activation of optimisation routines
  - Adaptive spark rate control
- Relative setback at sparks and progressive spark rate control enables optimal I DC level at a constant ramp up of I DC
- Fast recovery after spark - without necessity of quenching periods - allows high spark rate

\footnote{Nec : Number of half cycles in one energisation cycle.}
• POR: Power Off Rapping - Advanced strategies for cleaning plates with sticky dust
• EMCS: Energy Management Control System for easy and economic implementation of energy saving. *OPTIONAL*
• ARM: Alternative Resistivity Mode for quick setting of relevant control parameters in a second and well defined process state
• Combination of ARM and transition control
• RCO: Reduced Current Operation in case of high CO level, or at plate rapping
• Monitoring of precipitator voltage: mean U DC, trough U min, and peak U max.
• Monitoring and control of true RMS transformer primary current
• Corona Power monitoring
• FRM: Fast Ramp Mode for fast rate of rise of I DC after varying process conditions have been normalised.
• PIACS Bus: Serial communication bus for interface via PIACS Gateway (*OPTIONAL*) to various PLC or computer systems.
• Assistance for recording of CVC.
• Zero current operation of the main contactor
• Optimised interface for installation and service - Connector board comprising control relays and plug connectors

• Full control of RAPPING group
• Control of 3 independent gear motors, e.g. for collecting plates, discharge electrodes and vibrators for gas distribution screens
• Integrated POR strategy
• Synchronisation facilities (Block) for avoiding simultaneous rapping of bus-sections
• Easy commanding of continuous rapping operation

• Full control of HEATING group
• Control of 3 independent heaters, e.g. for supporting insulators, insulator shaft and hopper
• Direct connection of three Pt100 temperature sensors, using 3-wire compensated system
• Direct temperature monitoring
• Optionally two thermostat inputs
### Application
- Simple evaluation of rotating and linear movement with regard to underspeed: blocking

### Electrical design
- AC / DC

### Output
- Normally open

### Setting range [pulses/min.]
- 5..300

### Nominal voltage [V]
- 20..250 AC/DC

### Current rating (continuous) [mA]
- 350 AC (..+50°C) / 250 AC (..+80°C) / 100 DC

### Current rating (peak) [mA]
- 2200

### Minimum load current [mA]
- > 6

### Voltage drop [V]
- < 6.5

### Leakage current [mA]
- < 1.5

### Damping frequency (max.) [pulses/min]
- 1500

### Reverse polarity/overload protection
- —

### Hysteresis [% / Sr]
- 10

### Short-circuit protection
- —

### Start-up delay [s]
- 12

### Switching function
- Output is switched during the start-up delay and if (f actual) is greater than (f present)

### Adjustment of the switch point
- Multiturn potentiometer

### Operating temperature [°C]
- -25..+80

### Protection
- IP 67

### Housing material
- Brass special coated, Pocan

### Function display
- Green

### Switching status LED
- Green

### Connection
- PVC cable / 2m: 2 x 0.5mm²

### Wiring
- BN brown
- BU blue
DS2003
MONITOR FS-1
Housing for DIN rail mounting
2 relay outputs
2 transistor outputs
programmable
Test function without external frequency
Key function

Application
pulse evaluation system with uprocessor for slip/synchronous monitoring as well as frequency; rotational speed and speed

Nominal voltage [V]
idle: 110...240 AC/DC (50...60 Hz) / 27 DC (typ. 24 DC)
-20...+10

Voltage tolerance [%] 6 A (250 V AC); B300, R300

Contact rating 5 (3 W)

Power consumption [VA]

Adjustment range slip: 0.1...99.9 %
rotational speed (frequency): 1...60000 pulses/min (0.1...1000 Hz)

Inputs

pnp/npn; Namur (24 V)

Transistor outputs

auxiliary supply: typ. 24 V DC / 15 mA; short-circuit protected

Measuring error [% of the final value]
threshold pnp: > 12 V on; < 5 V off
threshold npn: > 15 V off; < 8 V on

Switching function

input frequency (max): 5 kHz (corresponds to min. pulse length / space 0.1 ms)

Switching status LED

ppp; external supply

Display switching voltage/current: 24 V DC / max. 15 mA; short-circuit protected

Switching function

< 1

Function display

1 switching output for slip monitoring; 1 switching output for overspeed/underspeed and acceptable range

Protection housing / terminals


Housing material

plastics

dual-chamber terminals 2 x 2.5 mm² (2 x AWG 14)

Connection

green (lights when the relay is energised / the transistor is closed)
yellow

Wiring

1: DC Supply voltage (L-)
2: DC Supply voltage (L+)
3: supply transistor outputs (L+)
4: sensor signal 1 pnp
5: DC Sensor supply (L+)
6: DC Sensor supply (L-)
7: AC/DC Supply voltage
8: AC/DC Supply voltage
9: n.c.
10: sensor signal 1 n.p.
11: sensor signal 2 pnp
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**Remarks**

overvoltage category II; degree of soiling 2

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Reserven die recht zur technischen Anpassung ohne vorherige Mitteilung. -- 08.06.2000 -- 06.03.2003