LAMPIRAN

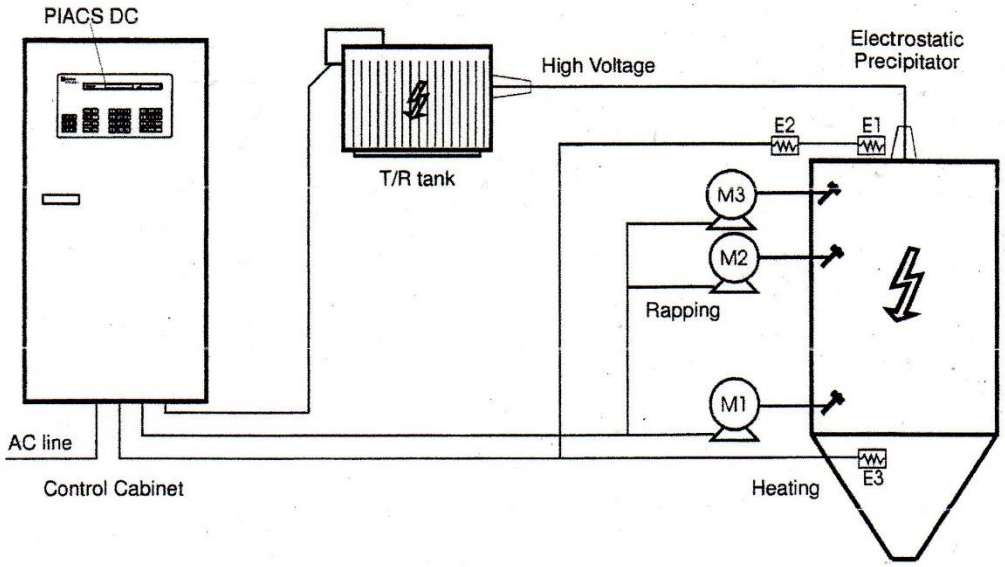

INSPECTION QUALITE F.T.
Test/Prüfung
Date :
Visa :
Contrôle/Kontrol
Date :
Visa :
france transfo
Schneider Electric
RECTIFIER EQUIPMENT
type : RHT MONOPHASE IP65
689865-02
norm
VDE0146
year
2004
supply
K
Uln
380 V
utilization
Upo
Iln
258 A
Idn
110 kV
0.9 A
F1
50 Hz
form factor
1.4
power
98 kVA
power
77 kW
silicon rectifier
cooling type
ONAN
dielectric
connection
II06
dielectric mass
OIL
ambient
40 °C
total mass
510 kg
1355 kg
NAL-238704
Lp
T
R
Ls
DF8PE4449


FLSmidth
PIACS DC
MAINS FAILURE MJ
IDC 300mA UDC 50.5kV
HGA11GT001
ALARM RESET
T
STATUS
I
STATUS
U
STATUS T/R
MISC.
7 8 9
4 5 6
1 2 3
0
CONFIG
LIMIT T/R
TEMP
RAMP T/R
TIME
CORONA T/R
POR
TUNING T/R
EMCS

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** [1]
- Automatic **optimisation** of corona power by :
  - Nec optimisation according to patented **B**ack **C**orona - detection
  - I DC mean current level optimisation acc. to **C**urrent **V**oltage **C**haracteristic – **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

[1] **Nec** : Number of half cycles in one energisation cycle.

- **POR** : **P**ower **O**ff **R**apping - Advanced strategies for cleaning plates with sticky dust
- **EMCS** : **E**nergy **M**anagement **C**ontrol **S**ystem for easy and economic implementation of energy saving. *OPTIONAL* !
- **ARM** : **A**lternative **R**esistivity **M**ode for quick setting of relevant control parameters in a second and well defined process state
- Combination of **ARM** and **transition** control
- **RCO** : **R**educed **C**urrent **O**peration 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** : **F**ast **R**amp **M**ode 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

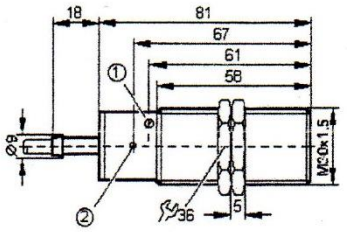
ecomat200

Evaluation systems

DI0001

Compact speed monitor DIA
Cable

Sensing range 10mm [f]
flush mountable

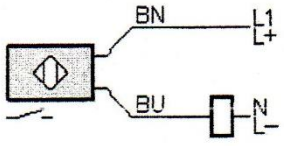


CE

	1: with pot., 2: LED
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 Switching status LED	green
Connection	PVC cable / 2m; 2 x 0,5mm²

Wiring

Core colours
BN brown
BU blue



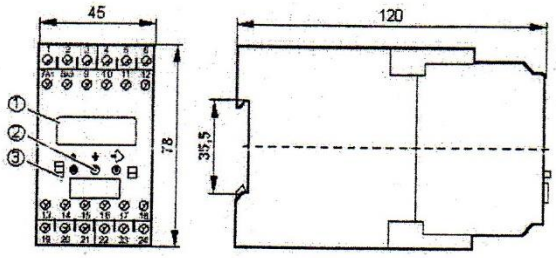
ecomat200

Evaluation systems

DS2003

MONITOR FS-1
Housing for DIN rail mounting

2 relay outputs
2 transistor outputs
programmable
Test function without external frequency
Key function



CE cULus LISTED

	1: LCD display; 7/14-segment, 2: Programming button, 3: LED
Application	**pulse evaluation system with µprocessor for slip/synchronous monitoring as well as frequency; rotational speed and speed**
Nominal voltage [V]	110...240 AC/DC (50...60 Hz) / 27 DC; (typ. 24 DC)
Voltage tolerance [%]	-20...+10
Contact rating	6 A (250 V AC); B300, R300
Power consumption [VA]	5 (3 W)
Adjustment range	slip: 0.1...99.9 % rotational speed (frequency): 1...60000 pulses/min (0.1...1000 Hz)
Inputs	pnp/npn; Namur (24 V) auxiliary supply: typ. 24 V DC / 15 mA; short-circuit protected threshold pnp: > 12 V on; < 5 V off threshold npn: > 15 V off; < 8 V on input frequency (max): 5 kHz (corresponds to min. pulse length / space 0.1 ms)
Transistor outputs	pnp; external supply switching voltage/current: 24 V DC / max. 15 mA; short-circuit protected
Measuring error [% of the final value]	< 1
Switching function	1 switching output for slip monitoring; 1 switching output for overspeed/underspeed and acceptable range
Max. relative air humidity [%]	75 (35°C)
Operating temperature [°C]	-20...60
Storage temperature [°C]	-25...80
Protection housing / terminals	IP 50 / IP 20
EMC	EN 61010: 1993 +A2: 1995; EMC 89/336/EEC; EN 50081-1; EN 61000-6-2
Housing material	plastics
Function display Switching status LED Input pulses LED	green (lights when the relay is energised / the transistor is closed) yellow
Display	LCD display; 7/14-segment
Connection	dual-chamber terminals 2 x 2.5 mm² (2 x AWG 14)
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 npn 11: sensor signal 2 pnp

	12: sensor signal 2 npn
	13: relay 1 (common)
	14: relay 1 (normally open)
	15: relay 1 (normally closed)
	16: transistor output 1 pnp
	17: Reset 1 pnp
	18: Reset 2 pnp
	19: relay 2 (common)
	20: relay 2 (normally open)
	21: relay 2 (normally closed)
	22: n.c.
	23: n.c.
	24: transistor output 2 pnp
Remarks	overvoltage category II; degree of soiling 2