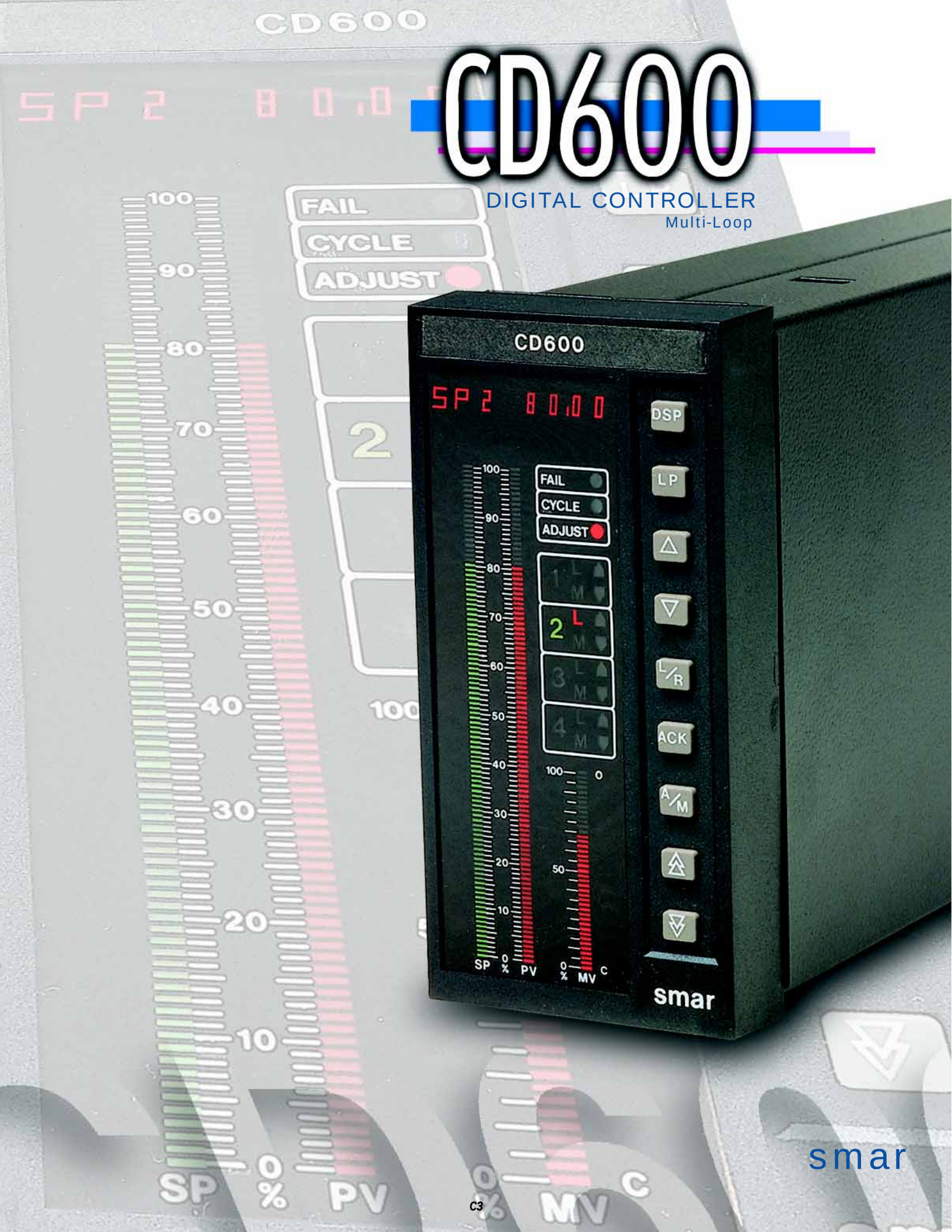
CD600

DIGITAL CONTROLLER

Multi-Loop



smar

INTRODUCTION

The **CD600** is a powerful stand alone single station controller capable of simultaneously controlling up to 4 loops with up to 8 PIDs and more than 120 advanced control blocks.

Designed, developed and manufactured by SMAR. Years of proven field experience are reflected in this powerful and reliable instrument. It is characterized by simplicity of use and application versatility.

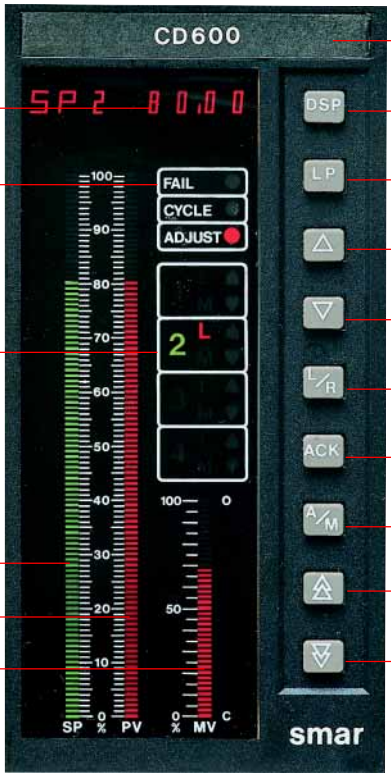
Programming is simply accomplished by interconnecting 120 pre-programmed control software modules, or by the selection of one of the many complete pre-programmed control configurations available.

In order to program it, one could use either the multipurpose Hand-Held Terminal or the CONF600. The CONF600 is a microcomputer software for DOS system which provides users with a user-friendly graphic interface.

The CD600 has technical features that make it one of the most advanced and powerful multi-loop controllers available in the world market.

A single unit is, for example, capable of controlling a complete boiler including 3 - element level control, cross limit combustion control and draft control.

- ✓ Up to four independent control loops with up to eight PID functions.
- ✓ 8 analog inputs, 4 digital inputs, 8 analog outputs and 8 digital outputs.
- ✓ Built-in backup station for both analog and digital outputs.
- ✓ 72 X 144 mm DIN panel with analog and digital indication of PV, SP and MV.
- ✓ 8-digit alphanumeric display and individual buttons for control operations.
- ✓ Built-in alarm station.
- ✓ Built-in 24 Vdc 160 mA power supply for up to 8 field transmitters.
- ✓ High reliability surface mount technology.
- ✓ More than 120 function blocks are available for user's programming.
- ✓ Several pre-programmed control configurations including cascade, ratio, feedforward, split range, 3-element boiler feed water control, distillation column control and many more.
- ✓ Embedded EIA-485 serial communication port.
- ✓ Easy integration to supervision systems and DCSs.
- ✓ Configuration via microcomputer or Hand-Held Terminal.
- ✓ Adjustment of control options through front panel.



8-Digit General Purpose Alphanumeric Display

Station Monitor

Loop Monitors
- Loop number
- Manual mode
- Local mode
- Alarm High and Low

Setpoint Bargraph

Process Variable Bargraph

Output Bargraph

Tag Holder

Display Selection

Loop Selection

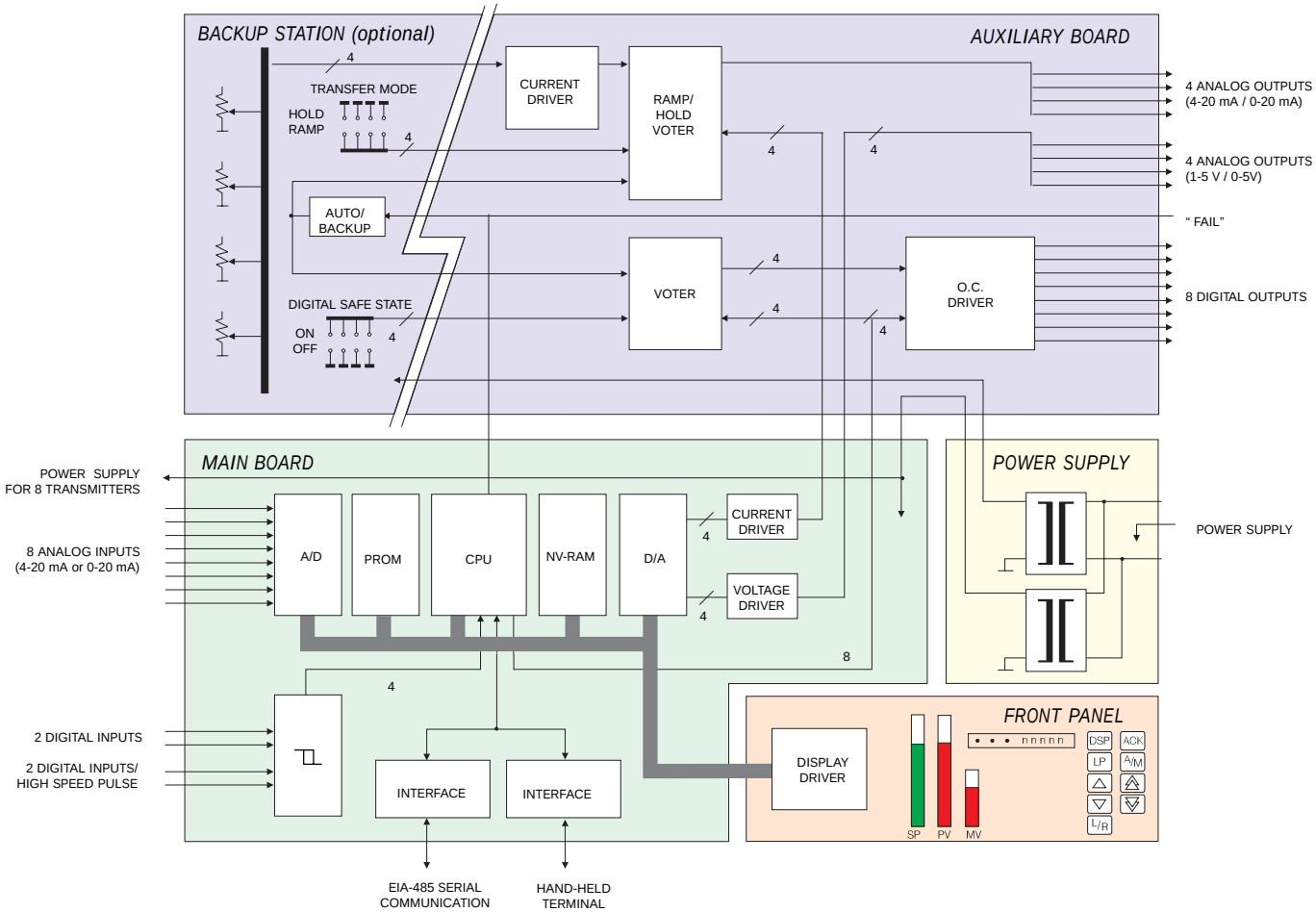
Actuation for Setpoint, Ratio, Selected Parameters, etc.

Local/Remote

Alarm Acknowledge

Auto/Manual

Manual Actuation

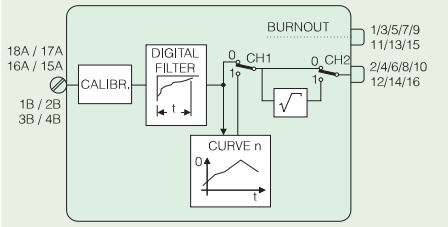


CONTROL FUNCTION BLOCKS

TERMINALS

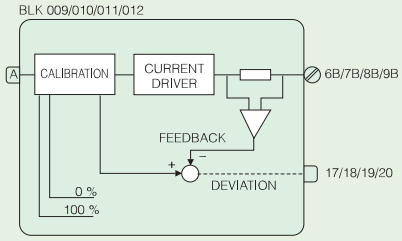
F01 - ANALOG INPUT (AI)

BLK 001/002/003/004/005/006/007/008



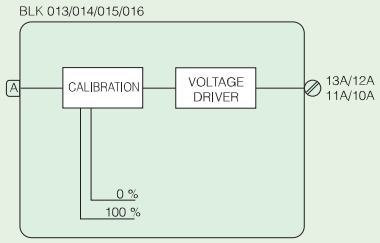
F02 - CURRENT OUTPUT (CO)

BLK 009/010/011/012



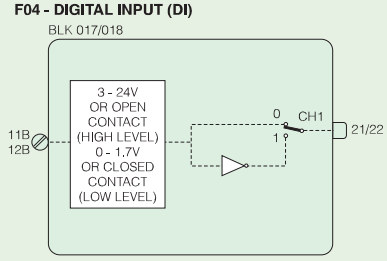
F03 - VOLTAGE OUTPUT (VO)

BLK 013/014/015/016



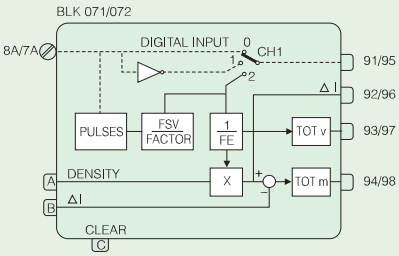
F04 - DIGITAL INPUT (DI)

BLK 017/018



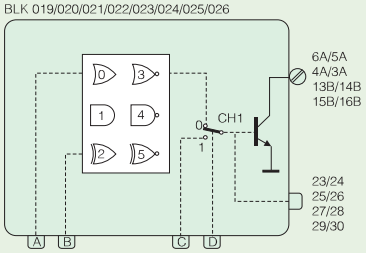
F19 - PULSE TOTALIZATION INPUT (P/DI)

BLK 071/072



F05 - DIGITAL OUTPUT (DO)

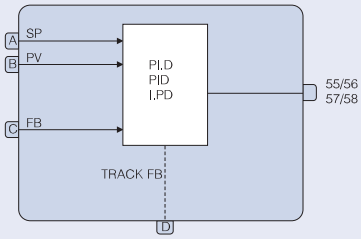
BLK 019/020/021/022/023/024/025/026



LOOPS

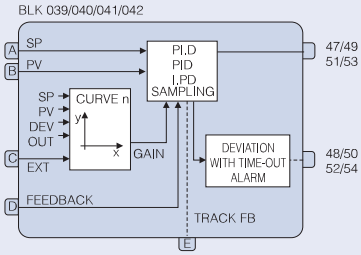
F10 - SIMPLE PID (PID)

BLK 043/044/045/046



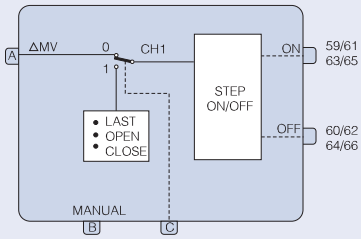
F09 - ADVANCED PID (APID)

BLK 039/040/041/042



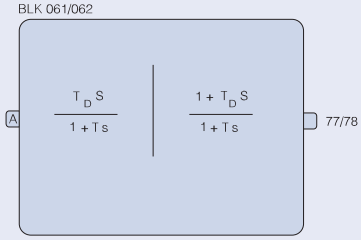
F11 - STEP CONTROLLER (STEP)

BLK 047/048/049/050



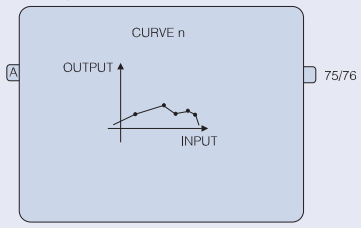
F15 - DERIVATIVE / LEAD-LAG (LL)

BLK 061/062



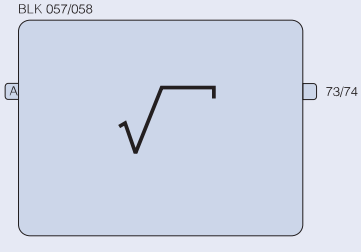
F14 - LINEARIZATION (LIN)

BLK 059/060



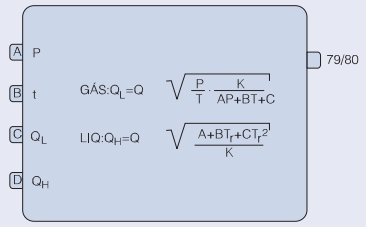
F13 - SQUARE ROOT (SQR)

BLK 057/058



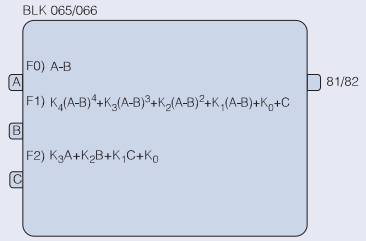
F16 - PRESSURE AND TEMP. COMPENSATION (PTC)

BLK 063/064



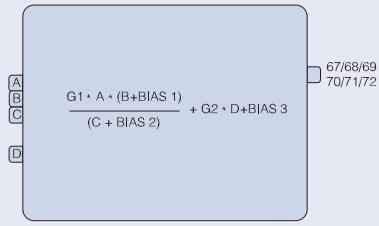
F17 - POLYNOMIAL (POL)

BLK 065/066



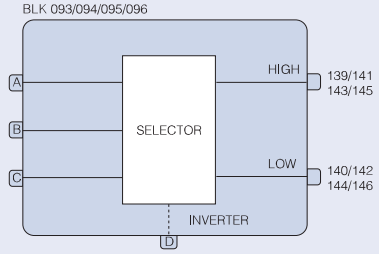
F12 - MULTIPLIER-DIVIDER-ADDER-SUBTRACTOR (ARTH)

BLK 051/052/053/054/055/056



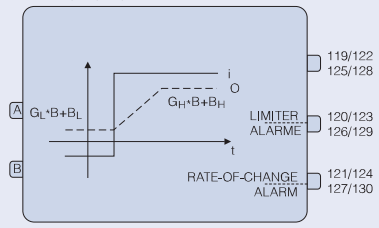
F26 - HIGH / LOW SELECTOR (H/L)

BLK 093/094/095/096



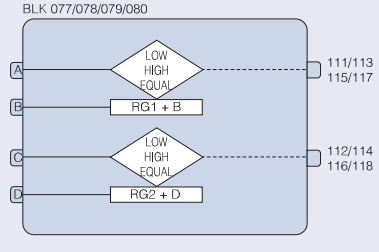
F23 - LIMITER WITH ALARM (LIMT)

BLK 081/082/083/084



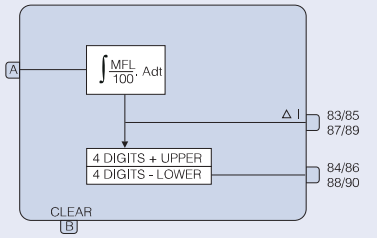
F22 - DOUBLE ALARM (ALM)

BLK 077/078/079/080



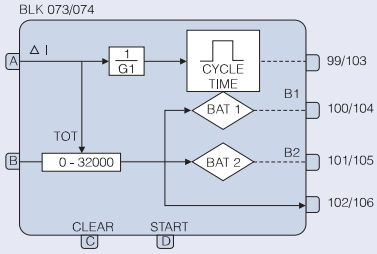
F18 - TOTALIZATION (TOT)

BLK 067/068/069/070



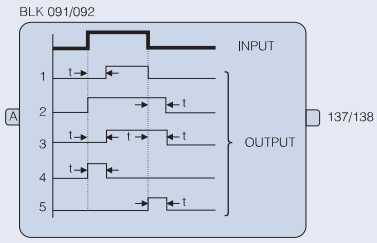
F20 - BATCH COMPARATOR (BAT)

BLK 073/074



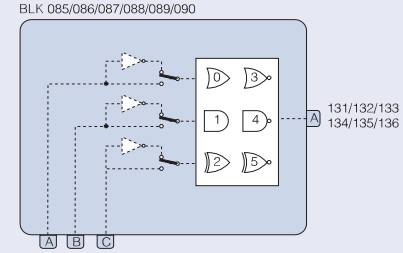
F25 - TIMER (TMR)

BLK 091/092



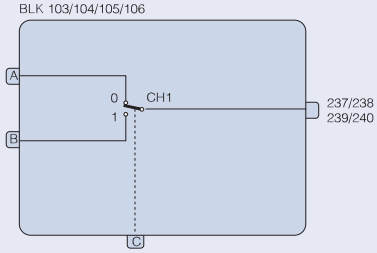
F24 - LOGIC (LOG)

BLK 085/086/087/088/089/090



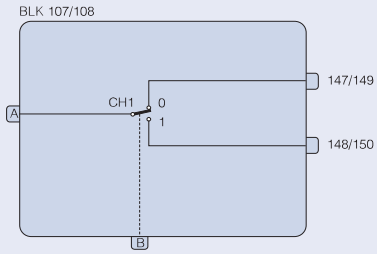
F29 - INPUT SELECTOR (ISEL)

BLK 103/104/105/106



F30 - OUTPUT SELECTOR (OSEL)

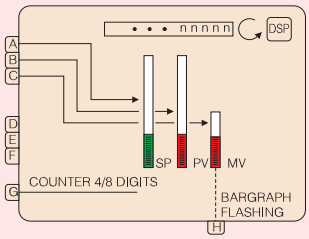
BLK 107/108



PANEL

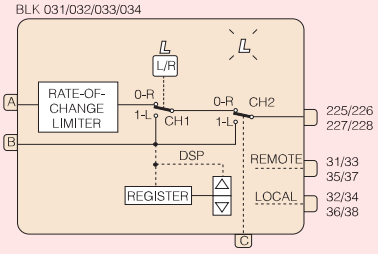
F06 - FRONT VIEW (FV)

BLK 027/028/029/030



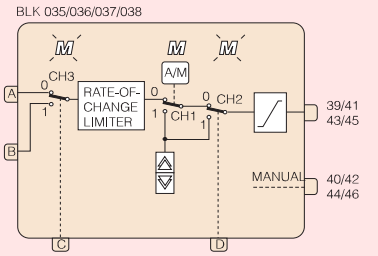
F07 - LOCAL / REMOTE SP SELECTOR (L/R)

BLK 031/032/033/034



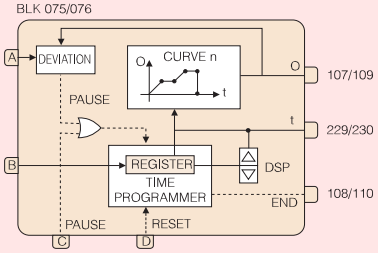
F08 - AUTOMATIC / MANUAL STATION (A/M)

BLK 035/036/037/038



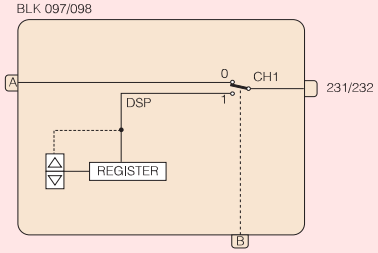
F21 - SETPOINT GENERATOR (SPG)

BLK 075/076



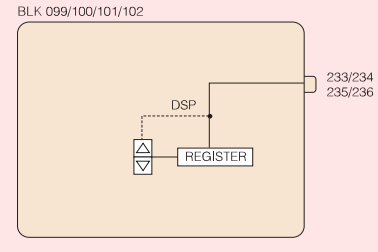
F27 - INTERNAL / EXTERNAL SELECTOR (SSEL)

BLK 097/098



F28 - CONSTANT ADJUSTER (ADJ)

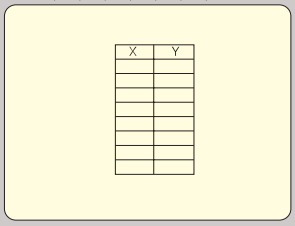
BLK 099/100/101/102



GENERAL

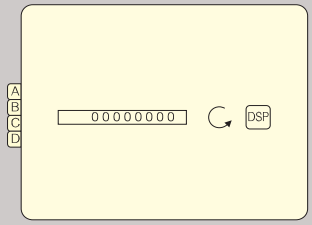
F31 - LINEARIZATION CURVE (PNT)

BLK 109/110/111/112/113/114/115/116



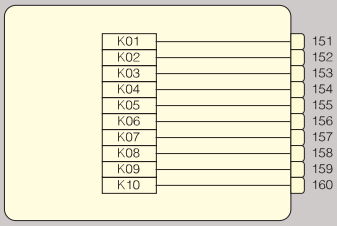
F32 - GENERAL VISUALIZATION (GV)

BLK 117



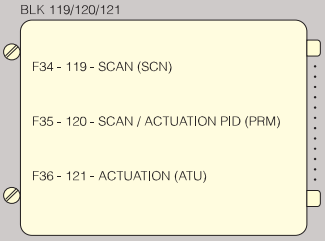
F33 - CONSTANTS (K)

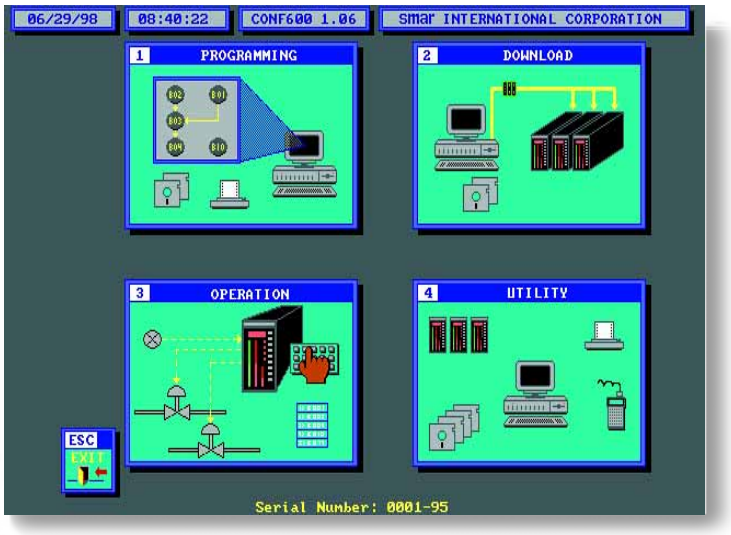
BLK 118



COMMUNICATION

BLK 119/120/121



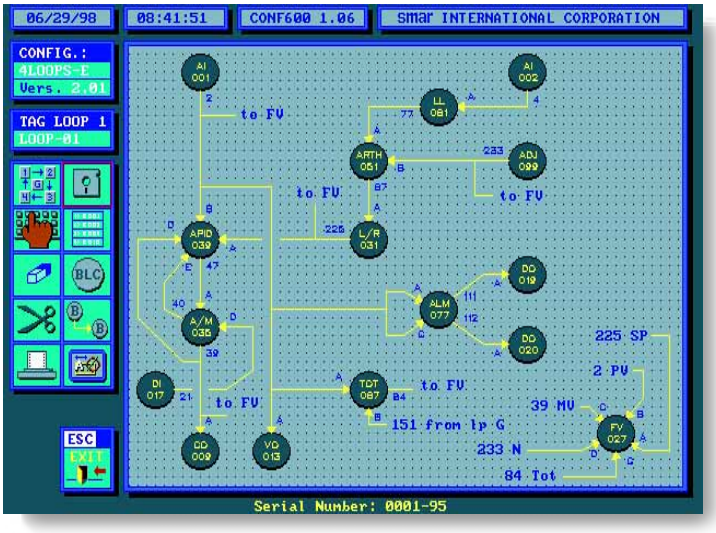


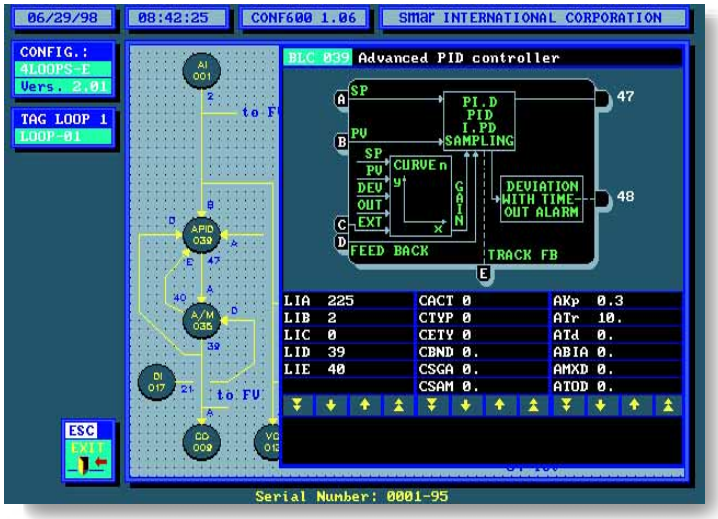
The **CONF600** is a system based on a IBM personal computer or compatible which offers graphic resources and an easy to use man-machine interface.

It is capable of performing storage of configurations in a floppy or hard disk, screen hardcopies, listings of configuration parameters, and communication with the CD600 and the Hand-Held Terminal.

The configuration of a control loop is made graphically, through diagrams similar to the ISA Standard ones, enabling the user to see and to implement easily a control strategy.

The downloading of a configuration to a CD600 is done in less than two seconds.





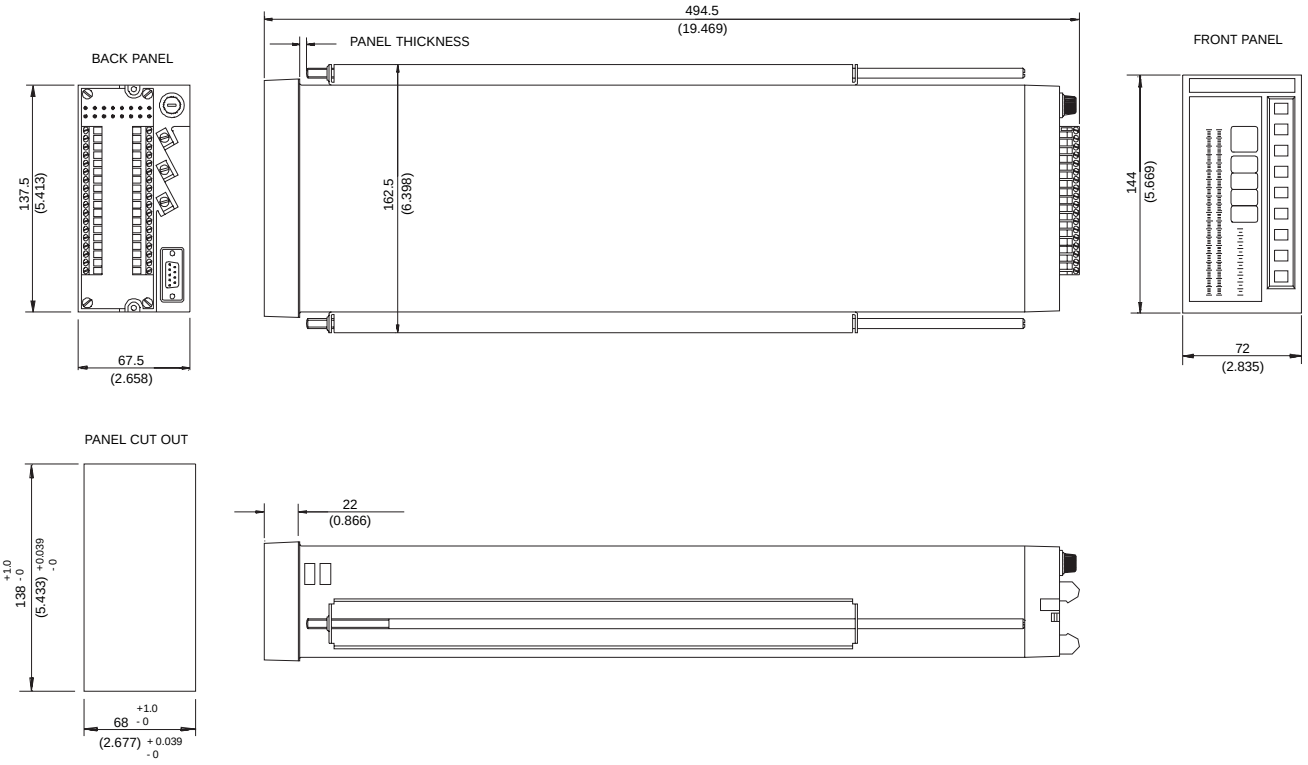
The alteration of parameters can be done on-line. The inputs and outputs of each block can be monitored simultaneously.

Using the CONF600 practically discards the need to consult the manual, since most of the block information is displayed on screen. Debugging a configuration becomes much quicker and simpler.

Power Supply		24 Vdc 110/127/220/240 Vac - 60/50 Hz
Loops Monitored	4	Simple or complex loops with up to 8 PIDs
Analog Inputs	8	1 to 5 Vdc or 0 to 5 Vdc, with input impedance of 1 MΩ 4 to 20 mAdc or 0 to 20 mAdc, with 250Ω shunt resistors (removable) Conversion accuracy: ±0.010 V
Digital Inputs	4	Open contact: 10 kΩ minimum or 3 to 24 Vdc Closed contact: 200Ω maximum or 0 to 1.7 Vdc maximum 2 inputs may be used for frequency, from 0 Hz to 10 kHz
Analog Outputs	8	4 - 4 to 20 mAdc or 0 to 20 mAdc, with maximum load of 750Ω Resolution: ±0.050 mA 4 - 1 to 5 Vdc or 0 to 5 Vdc, with minimum load of 1500Ω Resolution: ±0.015 V
Digital Outputs	8	Transistor open collector, 45 Vdc, 100 mA maximum on resistive load
Auxiliary Power Supply	1	24 Vdc, 160 mA maximum for up to 8 field transmitters
Front Panel Indication and Control	2 1 1 23 9	101-element LED bargraphs for Setpoint and Process Variable indication 41-element LED bargraph for Output indication 8-digit, general purpose alphanumeric display LEDs for alarm, status and loop monitoring Function keys
Processing Cycle Time		Adjustable (100 - 250 ms)
Serial Communication Port	1	EIA-485
Configuration Definition		Softwire function blocks (programming) or pre-programmed control configurations
Configuration Entry		Hand-Held Terminal or IBM-PC compatible personal computer
Optional Backup Station	1	Provides backup for the 4 analog current outputs and for 4 digital outputs Both preset and follow-up modes selectable
Installation Conditions		Ambient: 0 to 43°C, 20 to 90% RH Maximum Consumption: Basic 12.5 VA(ac)/10 W(dc) Backup 10 VA(ac)/8 W(dc) Add 0.7 VA(ac) or 0.5 W(dc) / transmitter powered
Dimensions		2.834 x 5.669 x 19.468 (inches) 72 x 144 x 494 (mm)
Weight		DC Models: Set with backup - 3.14 kg/6.92 lb Set without backup - 2.83 kg/6.24 lb AC Models: Set with backup - 4.12 kg/9.08 lb Set without backup - 3.60 kg/7.93 lb

DIMENSIONS

Dimensions are mm (inch)



ORDERING CODE

MODEL CD600	DIGITAL CONTROLLER - Multi-Loop
CODE	Voltage
1	100 Vac / 50 - 60 Hz
2	127 Vac / 50 - 60 Hz
3	220 Vac / 50 - 60 Hz
4	24 Vdc
5	240 Vac / 50 - 60 Hz
CODE	Backup
0	Without Backup
B	With Backup

CD600 - 0 | B ← TYPICAL MODEL NUMBER