

UNIVERSAL MULTI-LOOP INTELLIGENT ADVANCED CONTROLLER 600

Specification No. IAC 600 Base Unit 565-3-201
Touch-screen Unit 565-3-402
Remote Touch-screen Adaptor Kit 565-2-601

The Satchwell Intelligent Advanced Controller (IAC) is a multi-loop configurable controller designed primarily for use in typical multi-loop situations such as air-conditioning systems and Central Plant Heating/Cooling Systems.

The IAC base unit's 6 control loops are configurable and can be used, for instance, to control the pre-heater, the main duct temperature, humidity, and re-heat. One advantage of this integrated multi-loop controller is that the normal interlocks set up between discrete controllers on a typical system, are carried out internally by the controller, thus saving on external wiring. The IAC unit also has a clock and time schedules built-in which are used to switch plant control modules etc. The IAC includes full plant sequence control and rotation based on plant hours run to control Chillers and Boilers as required.

Other features include a number of preset applications in the software to cater for typical control schemes. These applications can be selected from the IAC base bit switch, the optional keyboard and from a central computer running the Satchnet Networking software. The schemes supplied can also be customised to suit any unusual applications encountered and provide flexibility in the design and commissioning stages of a job. Complete custom applications can also be created from scratch in much the same way, using the main Satchnet computer using the Bubbleland graphical interface.

The Satchnet Bubbleland software is fully graphical. Setting and amending the IAC configurations involves selecting and joining the required modules using the mouse. If the set up of a single IAC is repeated in others then the Satchnet software allows the configuration to be copied as often as required to the other IAC units.



THE TOUCH-SCREEN

The IAC Base unit also has an optional Touch-screen, which gives access to upto 31† IAC base units on its own sub LAN (including the IAC 600, 400, 420 and 200). The Touch-screen is mounted direct on the IAC base unit.

The Touch-screen allows the user to interrogate the IACs by using the touch sensitive screen and menu system. Information on the sensor values and outputs can be displayed and parameters can be altered if required. The Touch-screen contains a battery backed clock that is used by the IACs on the sub LAN as a back up to their own internal clocks.

† Dependent on the number of parameters to be displayed. Each Touch-screen can display upto 256 parameters.



DS 2.10A/2.951A - Wiring & Commissioning
Information
DS 5.00A /2.501- Commissioning Details
MLI 2.10/2.951 - Mounting Details



FEATURES

- Intelligent multi-loop controller - up to 6 P+I+D control loops
- Compensation and optimisation modules
- Configured via Satchsoft Networking software using the simple Bubbleland graphical interface
- Standard selectable applications built in to the controller
- Inputs and outputs can be freely distributed or shared between control modules
- Eight Digital (on/off triac) outputs
- Four 0 to 10 Volt dc outputs
- Six temperature (resistive) sensor inputs
- Six 0 to 10 Volt dc inputs for Humidity, pressure and velocity
- Eight Voltage free switched inputs for use as alarms, Pulse counting etc
- Proportional, Integral and Derivative control actions can be individually set on each controller module
- Lighting and Chiller/Boiler Sequence control
- Wall or DIN rail mounting
- Utility modules allow the use of logic functions, mathematical functions, averaging, rate limiting, alarms, delays, enthalpy switching, logging, pulse counting, Plant rotation, hours run, remote setting and scaling
- Internal time clock and time schedules for plant and controller switching

TOUCH-SCREEN (OPTIONAL)

- Mounts on IAC Base Unit or optional panel mounting
- Touch sensitive graphic LCD screen
- Menu operation for interrogation and setting
- Back-lit screen for easy viewing
- Communicate with up to 31* IAC base units (including IAC 600, 400, 420 and 200)
- Battery backed clock provides time synchronisation for the IAC units
- Display graphical logged data

SPECIFICATIONS

Type:	IAC 600 – Universal multi-loop intelligent advanced controller – Specification No. 565-3-201 565-3-402 – Touch-screen 565-2-601 – Remote Touch-screen adaptor kit 565-2-602 – Trunking adaptor Kit
Control Range:	–40 to 150°C, –40 to 302°F 20 to 90% Rh, 250 to 9750 Ohms, 0 to 10,000 LUX (using NORP-12 Light Dependent Resistor (LDR))
Power Supply:	IAC Base Unit: 24Vac (+/- 10%), 50/60Hz. Supplied from a transformer conforming to EN 60742 - See DS 25.00/25.001 for details. Touch-screen: Powered from the IAC unit
Fuse:	IAC Base Unit: 2A Touch-screen: None fitted
Consumption:	IAC Base Unit: 10VA maximum (excluding Touch-screen and any connected outputs) Touch-screen: 2.5VA, Powered from the IAC base unit
15 Volt dc output:	IAC Base Unit: 30mA max
Power Failure Reserve:	IAC Base Unit: Non volatile RAM preserves memory for 10 years under normal conditions of use. The clock will stop during power failure but memory will be preserved so that normal control is resumed on restoration of power. If a Touch-screen is used then its internal clock is used to reset the IAC clock. Touch-screen: Non volatile RAM with built-in Real Time Clock gives 3 year back up of clock and memory under normal conditions of use (10 years data back up if the Real Time Clock is disabled).
Ambient Temperature Limits:	Operating: IAC Base Unit: 0 to 50°C, Touch-screen: 0 to 40°C Storage/Transit: –20 to 60°C
Max. Ambient Humidity:	Operating and storage: 95% Rh non condensing

IAC BASE UNIT INPUTS

Sensors:	Six temperature (resistive), See fig.1 Six 0 to 10 Volt dc, See fig.1 maximum input 10 Volts dc.
Digital Input:	Eight Voltage free contacts, opto isolated. The inputs can be used for pulse counting, 0.5 Hz maximum. They can also be used for alarms, overrides etc.
Serial Link:	EIA standard RS422/485 half duplex opto isolated (Satchwell Control Systems' protocol - Refer to Marketing Department for information)

IAC UNIT OUTPUTS

Actuators:	Four 0 to 10 Volt dc, See fig.1 Eight digital (triac on/off) outputs, see fig.1
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Notes:-

1. All 0 to 10 Volt outputs are protected against accidental short circuit to 24Vac and ground.
2. Short circuit current of each 0-10Vdc output \approx 10mA (source resistance is \approx 1000 Ω).
3. Load resistance for each 0-10Vdc output must be equal to or greater than 10k Ω .
4. The maximum current that a 0-10Vdc output can source is 1mA.

IAC - INPUT/OUTPUT DIAGRAM

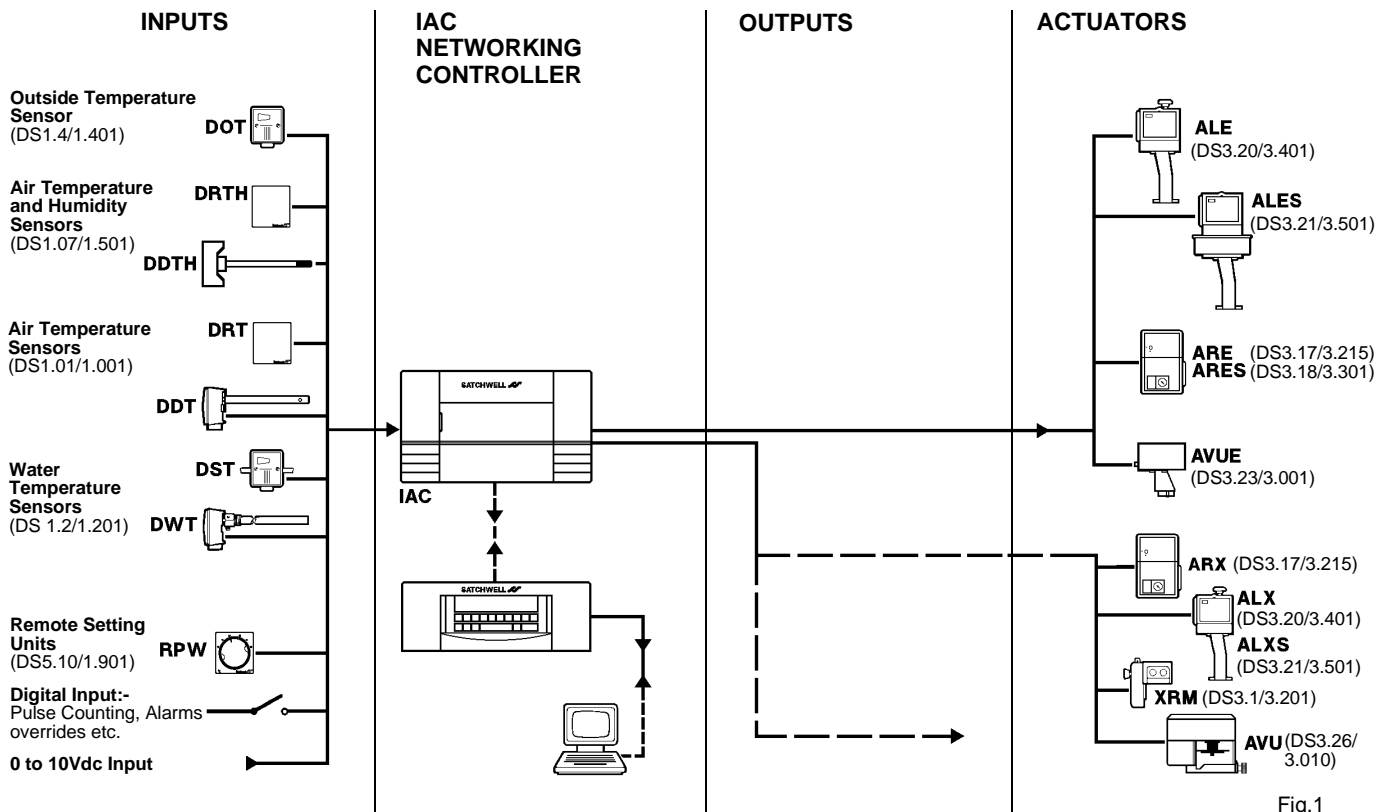


Fig.1

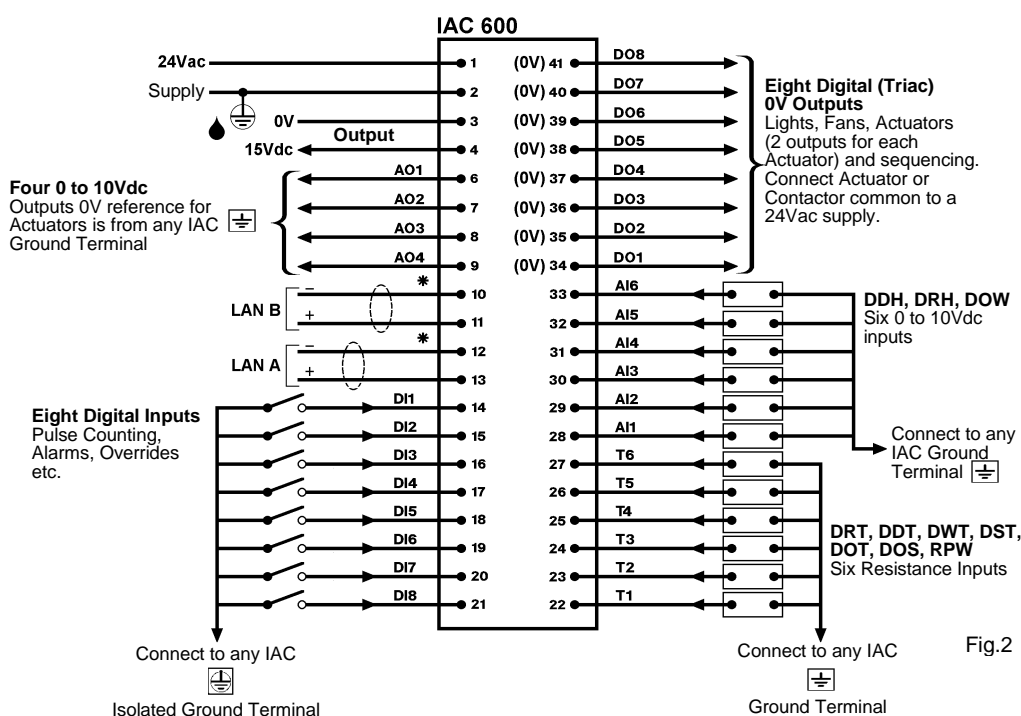
ACCESSORIES

- 565-3-402 – Touch-screen with touch sensitive display area
- 565-2-601 – Remote Touch-screen adaptor kit
- 565-2-602 – Trunking adaptor kit allows the fitting of standard trunking to the IAC unit

CONSTRUCTION

- Case:** IAC Base Unit: Moulded Polycarbonate plastic case. Fire resistant to UL94 V-0. Touch-screen: Moulded Polycarbonate plastic case. Fire resistant to UL94 V-0.
- Protection Class:** IP40
- Mounting:** IAC Base Unit: DIN rail or surface mounting only. (DIN rail to DIN 46277 Part 3 - EN 50022/BS 5584) Touch-screen: Direct to IAC base unit or optionally panel mounting
- Touch-screen panel cut-out size:** 92mm x 186mm DIN 43700 maximum panel thickness is 6mm
- Terminals:** Accept one 1.5 mm² wire. Pluggable screw terminal blocks (low Voltage only).

BASIC WIRING DIAGRAM FOR IAC BASE UNIT



Note:-

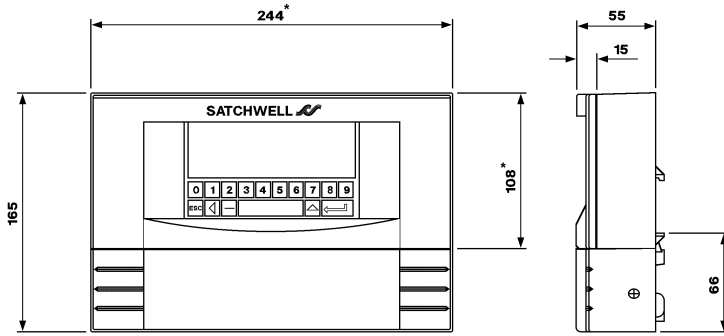
The actual terminal block is a double block running across the bottom of the IAC. The top (double height) block contains terminals 1 to 33 and the bottom (single height) contains 34 to 41 and all of the Ground and Isolated Ground terminals. Terminal numbers run from left to right.

- ◆ Ensure Terminal 2 is earthed.
- * LAN A and LAN B should be screened with the screen earthed only on a verified good earth at the computer or MIU. LAN A and B screens should be connected to the isolated Ground Terminals of each of the IACs on the LAN. See DS 2.10A/DS 2.951A.
- Terminal 5 is not used.
- If an earth busbar is to be used then it must be connected to a single Ground Terminal on the IAC by a single cable which should be as short as possible and no more than 150mm long. Earth wire minimum 30/0.25 (1.5mm²) Stranded Cable.

Fig.2

DIMENSION DIAGRAM

* Dimensions also apply to Touch-screen when panel mounting



Total Touch-screen depth when panel mounted = 70mm

Dimensions in mm

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CAUTION

- For full wiring information refer to DS 2.10A/2.951A.
- 24Vac devices must be supplied by a transformer conforming to EN 60742.
- Contains a Lithium Chloride Battery which is completely safe whilst in normal use. The battery must be disposed of in an authorised ground fill site.
- Design and performance of Satchwell equipment are subject to continual improvement and therefore liable to alteration without notice.
- Information is given for guidance only and Satchwell do not accept responsibility for the selection or installation of its products unless information is given by the company in writing relating to a specific application.