

## BUILDING AUTOMATION SYSTEM

The Crompton Protocol Interface Unit (PIU) is a fully-functional interface between a Building Automation System and one or more Crompton Integra electrical power meters. Using the interface, an operator located at a BAS Terminal can directly view electrical measuring and metering data collected by the Integra installation. To do this, the operator displays standard BAS input points that have been mapped to target system data messages.

Using mapped BAS output points, the user can adjust and reset selected Integra parameters.

The PIU acts as a communications interface, providing a common boundary between protocols so that a two-way data link is achieved. Message transfer is achieved using the Modbus protocol. The PIU polls the Crompton system for data, updating mapped point status/value as relevant data messages are received.

The Crompton PIU is just one of a large number of third-party interface options available for the BAS.

## FEATURES

- Maps measured electrical data from Crompton meters to BAS points.
- Supports all measured values from Integra meters.
- Allows remote resetting and adjustment of Maximum Demand parameters.
- Installs and commissions easily. PIU attaches to RS 485 connector of Integra 1000 or 2000.
- Uses popular Modbus protocol for message transfer. Standard Modbus codes used to READ/WRITE parameters.
- Addresses all Integra meters on multi-drop RS 485 network. Up to 31 meters (Integra 1000/2000) can be addressed by a single PIU.
- Provides a centralised monitoring console for integrated systems.
- Provides sophisticated alarm notification for maintenance and fault alarms.
- Promotes easy installation due to small hardware footprint.
- Ensures system integrity through high-level integration. Failure of one system will not adversely affect the other.
- Identical functionality to the earlier Mk 1 version (579-1-672).
- Supports mapping of up to 350 points (per PIU). Higher point counts accommodated through additional PIUs.
- Benefits from well-proven Satchwell generic PIU platform using dedicated EPROM.
- Provides a consistent user interface within an integrated environment through standard point display format.
- Benefits from configurable alarm features using BAS Alarm Manager. Alarm notification can be extended through pager or fax messaging.
- Provides facilities to generate mimics of the site installation using BAS Active Graphics. Points can be linked to animations indicating status dynamically.
- Allows diversity in utilisation and presentation of logged data with BAS Logging Manager.
- Allows flexibility in configuration of point behaviour and display using BAS Point Editor.
- Supports cross-referencing of other points on the BAS.
- Offers considerable possibilities for enhancement of the management and ongoing development of all site services.



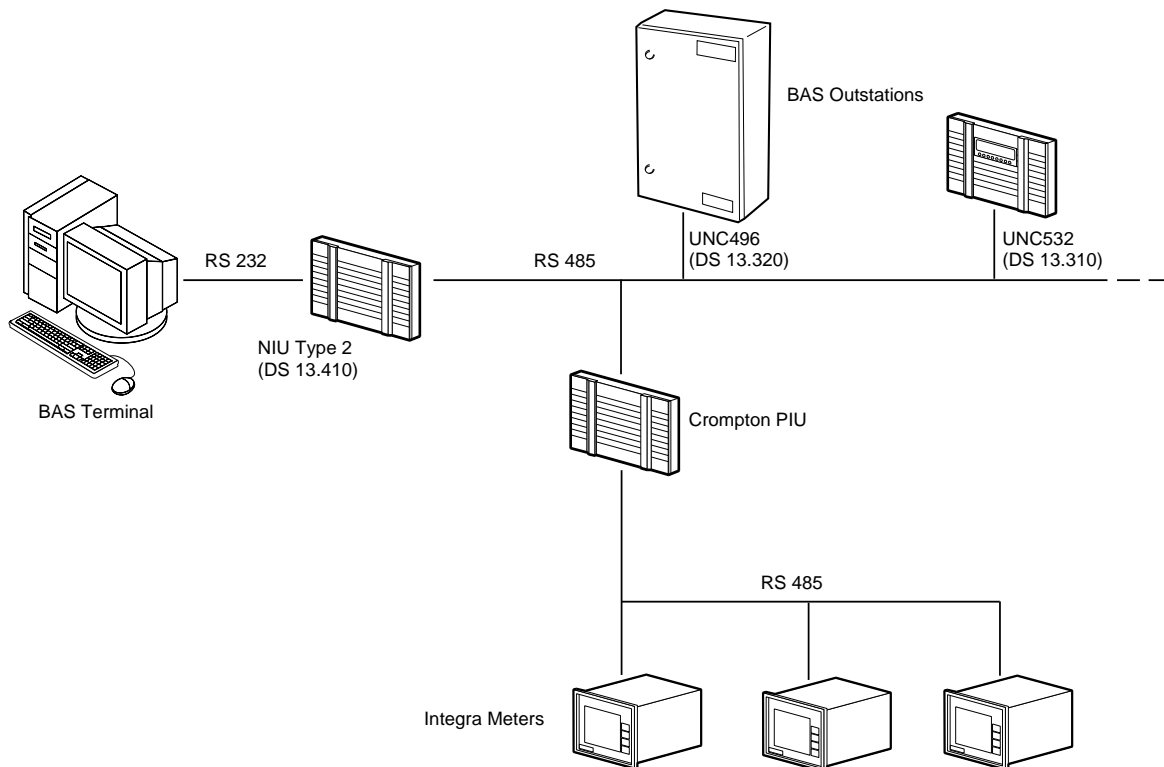
## SPECIFICATION

<b>Type:</b>	<b>BAS-PIU:</b> Crompton PIU complete with EPROM and Reference Manual (on CD).
<b>Maximum Number of points:</b>	350 per PIU - Hardware points are not supported.
<b>PIU Hardware:</b>	BAS Generic PIU fitted with appropriate EPROM.
	<b>EPROM:</b> 512kbytes
	<b>RAM:</b> 512kbytes
	<b>Port Usage:</b> PL1 - RS 485 for connection to BAS LAN. PL2 - RS 485 for connection to first Crompton Integra Meter in chain.
<b>Power Consumption</b>	24VA
<b>Indicator:</b>	LED indication of PIU operation.
<b>Supported Hardware:</b>	Crompton Integra 2000, 112 parameters either directly measured or calculated from measurement Crompton Integra 1000, sub-set of Integra 2000 parameters (32 off)
<b>Protocol:</b>	Modbus protocol used, specifically Functions 3, 4 and 16.

## CONSTRUCTION

<b>Case:</b>	Metal chassis with plastic side panels.
<b>Protection Class:</b>	IP 40 (using additional trunking kit).
<b>Terminals:</b>	Hard-wired pluggable screw terminals (0.5 to 1.3mm <sup>2</sup> conductor).
<b>Cable Entry:</b>	Chassis knockouts in top, back and bottom. N.B. Trunking kit is for use with chassis bottom knockouts.

## TYPICAL SYSTEM DIAGRAM



## PRODUCT INFORMATION

The Crompton PIU integrates the BAS with one or more Crompton Integra 1000 or 2000 electrical power meters. These meters have a standalone capability and can also be networked in a multi-drop daisy-chain configuration. The meters can be interrogated remotely by an external application connected into the network and using Modbus protocol for message passing.

Integration with the BAS allows the BAS operator to monitor the information measured by the Integra meters using mapped BAS points. The Crompton PIU exchanges data with the Crompton system using RS 485 signals under the Modbus protocol.

The information received from the Crompton system is displayed on a BAS Terminal using standard BAS analogue and digital point displays.

Where Maximum Power Demand is monitored by the Integra system, the Crompton PIU can be used to adjust the demand sub-interval and the number of sub-intervals in the Demand Period. The PIU can also reset the Maximum Demand period.

The Crompton PIU cannot be used to configure the Integra meters or to control the Crompton system except as described for Maximum Demand parameters.

### INTEGRATION WITH THE BAS

The BAS interfaces to the Crompton system using a PIU. The Crompton PIU is based on Satchwell's Generic BAS PIU platform, i.e. the Type D hardware with firmware specific to the target system. The PIU connects to an RS 485 serial port on the Integra 1000 or 2000

### Modbus Register Addresses for Crompton Integra PIU

Address	Parameter
1	Volts1
2	Volts2
3	Volts 3
4	Current 1
5	Current 2
6	Current 3
7	Watts 1
8	Watts 2
9	Watts 3
10	VA 1
11	VA 2
12	VA 3
13	VAr 1
14	VAr 2
15	VAr 3
16	Power Factor 1
17	Power Factor 2
18	Power Factor 3
19	Phase Angle 1
20	Phase Angle 2
21	Phase Angle 3
22	Volts Average
23	Voltage Sum
24	Current Average
25	Current Sum
26	Watts Average
27	Watts Sum
28	VA Average
29	VA Sum
30	VAr Average
31	VAr Sum
32	Power Factor Average
33	Power Factor Sum
34	Phase Angle Average
35	Phase Angle Sum
36	Frequency
37	W.hr Import
38	W.hr Export

Address	Parameter
39	VAr.hr Import
40	VAr.hr Export
41	VA.hr
42	A.hr
43	W Demand Import
44	W Maximum Demand Import
45	W Demand Export
46	W Maximum Demand Export
47	VAr Demand Import
48	VAr Maximum Demand Import
49	VAr Demand Export
50	VAr Maximum Demand Export
51	VA Demand
52	VA Maximum Demand
53	A Demand
54	A Maximum Demand
55	Volts 1 Maximum
56	Volts 1 Minimum
57	Volts 2 Maximum
58	Volts 2 Minimum
59	Volts 3 Maximum
60	Volts 3 Minimum
61	Current 1 Maximum
62	Current 1 Minimum
63	Current 2 Maximum
64	Current 2 Minimum
65	Current 3 Maximum
66	Current 3 Minimum
67	Volts Average Maximum
68	Volts Average Minimum
69	Volts Sum Maximum
70	Volts Sum Minimum
71	Current Average Maximum
72	Current Average Minimum
73	Current Sum Maximum
74	Current Sum Minimum
75	Watt 1 Maximum
76	Watt 1 Minimum

Address	Parameter
77	Watt 2 Maximum
78	Watt 2 Minimum
79	Watt 3 Maximum
80	Watt 3 Minimum
81	Watt Sum Maximum
82	Watt Sum Minimum
83	VAr 1 Maximum
84	VAr 1 Minimum
85	VAr 2 Maximum
86	VAr 2 Minimum
87	VAr 3 Maximum
88	VAr 3 Minimum
89	VAr Sum Maximum
90	VAr Sum Minimum
91	VA 1 Maximum
92	VA 1 Minimum
93	VA 2 Maximum
94	VA 2 Minimum
95	VA 3 Maximum
96	VA 3 Minimum
97	VA Sum Maximum
98	VA Sum Minimum
99	Frequency Maximum
100	Frequency Minimum
101	V L1-L2
102	V L2-L3
103	V L3-L1
104	V L-L Average
105	V L1-L2 Maximum
106	V L1-L2 Minimum
107	V L2-L3 Maximum
108	V L2-L3 Minimum
109	V L3-L1 Maximum
110	V L3-L1 Minimum
111	V L-L Average Maximum
112	V L-L Average Minimum

meter. The connection is made via a twisted-pair, shielded cable (RxD and TxD). Typical network architecture is a multi-drop link so terminating resistors are required at either end of the chain, i.e. the PIU at one end and the last Integra meter at the other end.

### PIU OPERATION

The PIU is configured as a node on the BAS LAN and appears to the BAS as a standard outstation. Whereas a typical BAS outstation utilises hardware I/O points wired direct to plant, the Crompton PIU maps points to addressed Crompton data registers.

To achieve this, a mapping table is used by the PIU, one entry for each mapped point.

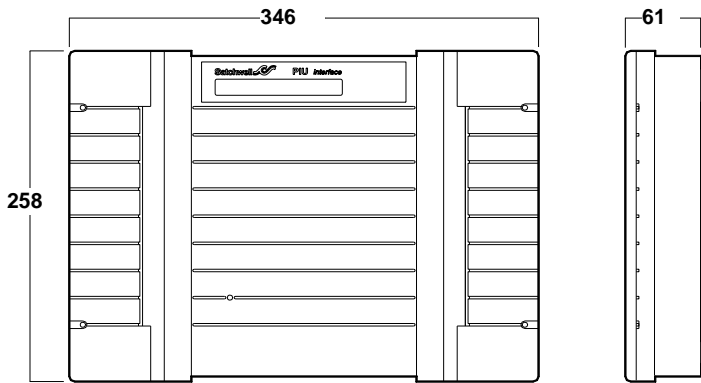
The PIU polls the Crompton system for data. Where received data messages matches a message line in the mapping table, the value/status of the mapped BAS point is updated. When a mapped point is displayed at the BAS Terminal, the point value is uploaded from the PIU, reflecting the latest available system information.

### POINT ALLOCATION

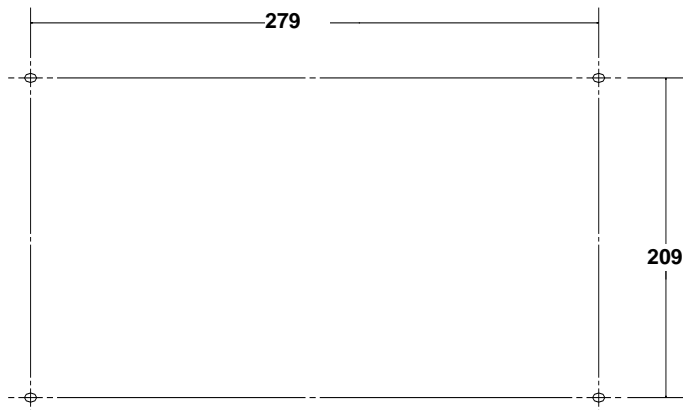
The Crompton PIU supports up to 350 points for mapping to Crompton data. When configuring mapped-point descriptions, only point numbers in the range 51 to 400 may be used.

The Crompton PIU supports BAS digital and analogue points, input and output, i.e. ST, CMD, AI and AO points. BAS software points are also supported. These points may be configured as required, using mapped points for cross-referencing. Soft points may be numbered in the range 1 to 400.

## DIMENSION DRAWINGS



Overall Dimensions  
Dimensions in mm



Fixing Hole Dimensions  
Dimensions in mm

### WARNING -

THE CROMPTON PIU IS A MAINS OPERATED DEVICE. LOCAL WIRING REGULATIONS AND USUAL SAFETY PRECAUTIONS MUST BE OBSERVED. ALWAYS USE A GOOD VERIFIED EARTH CONNECTION.

#### Cautions

- Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.
- If any equipment covers have to be removed during the installation of this equipment, ensure that they are refitted after installation to comply with UL and CE safety requirements.
- The Crompton PIU should be installed by a Schneider Electric engineer or an approved Schneider Electric agent.
- It is possible that this publication may contain references to or information about Schneider Electric products (hardware and software), programming or services that are not announced in your country. Such references or information should not be construed to mean that Schneider Electric intend to announce such products, programming or services in your country.
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- Information is given for guidance only and Schneider Electric does not accept responsibility for the selection and installation of its products unless information has been given by the company in writing relating to a specific application.
- A periodic system and tuning check of the control system is recommended. Please contact your local sales office for details.

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