



## **SFP**

**Covers models : SFP-104-108/SFP-104-116  
SFP-104-108US/SFP-104-116US**

# **STORE FUSION PLATFORM**

## **OPERATION & MAINTENANCE MANUAL**

Doc. Ref. MNSFP REV. 5

reliability   °   efficiency   °   performance

## Approvals

- EN61010:2010 • UL61010-1 • CSA C22.2 61010-1

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'Caution, Risk of Electric Shock' Please isolate elsewhere before opening Monitor door.



Please read this manual before installing or servicing the equipment.

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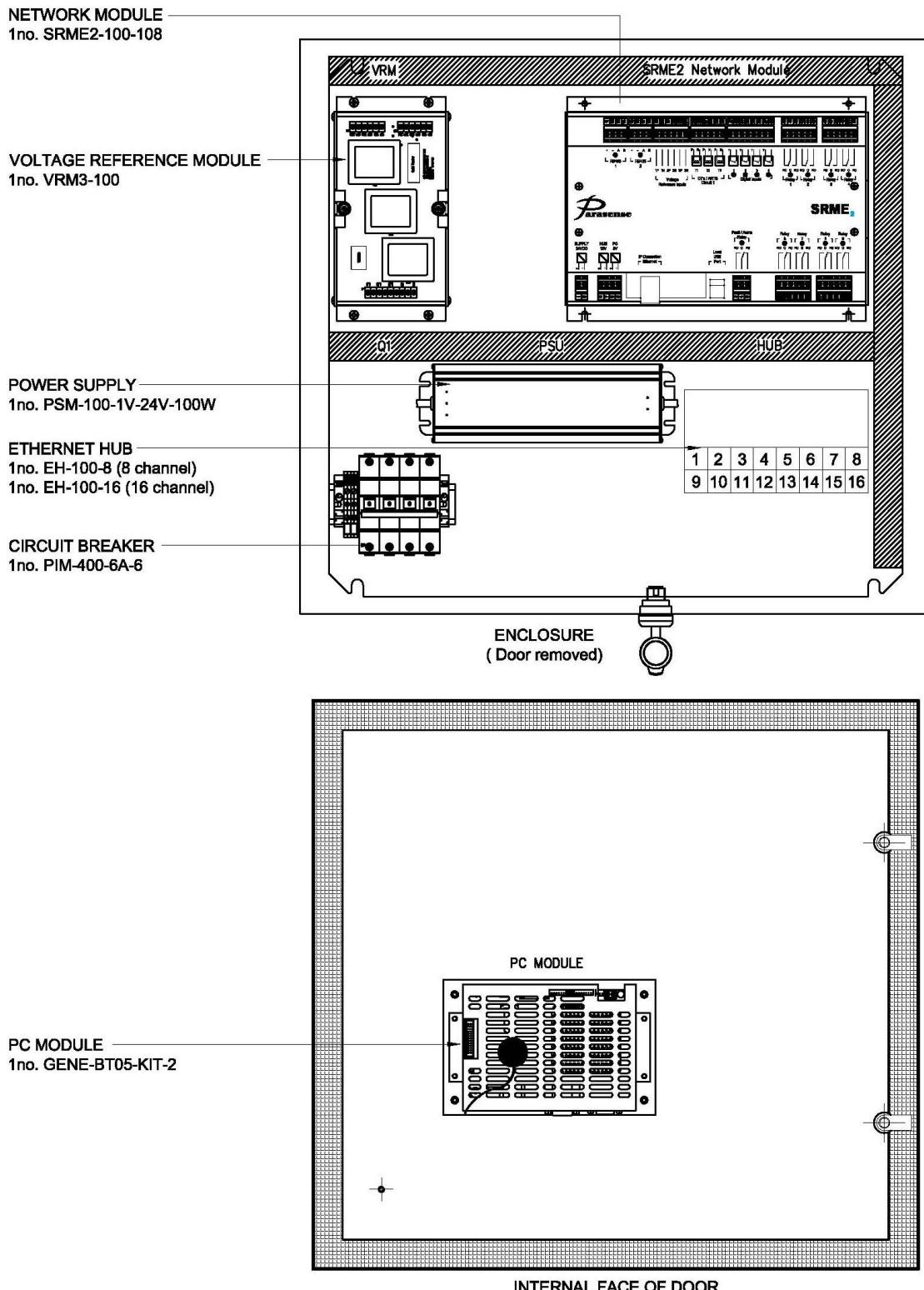
Revision	Details	Checked
2-1: 24 <sup>th</sup> March 2015	New Issue	AK
3-0: 28 <sup>th</sup> Sept. 2015	Modification in line with final UL certification report. Checked box added to this table	AK
3-1: 18 <sup>th</sup> May 2016	UL specification SART details added.	AK
3-2: 20 <sup>th</sup> Sept 2016	SART drawings updated. Quality management logo updated.	AK
4-1: 9 <sup>th</sup> August 2017	SART photos and drawings updated	AK
4-2: 26 <sup>th</sup> March 2018	Branding updated.	JB
4-3: 23 <sup>rd</sup> April 2018	Drawing PM2163 updated with new torque settings for 300,600 and 1200A SARTs	JB

4-4: 21 <sup>st</sup> Feb 2019	PM2163 updated with SART cable position recommendations and associated error information	PJ
5 March 2020	Updated addresses	JH

# 1 INTRODUCTION

The SFP (Store Fusion Platform) is a versatile multi-channel intelligent control and monitoring system. It functions as a site integration platform enabling a single WAN/LAN connection to multiple ethernet controllers via a secure dual ethernet system. High level integration algorithms enable information from the connected systems to optimize performance, reduce energy usage and improve carbon footprint.

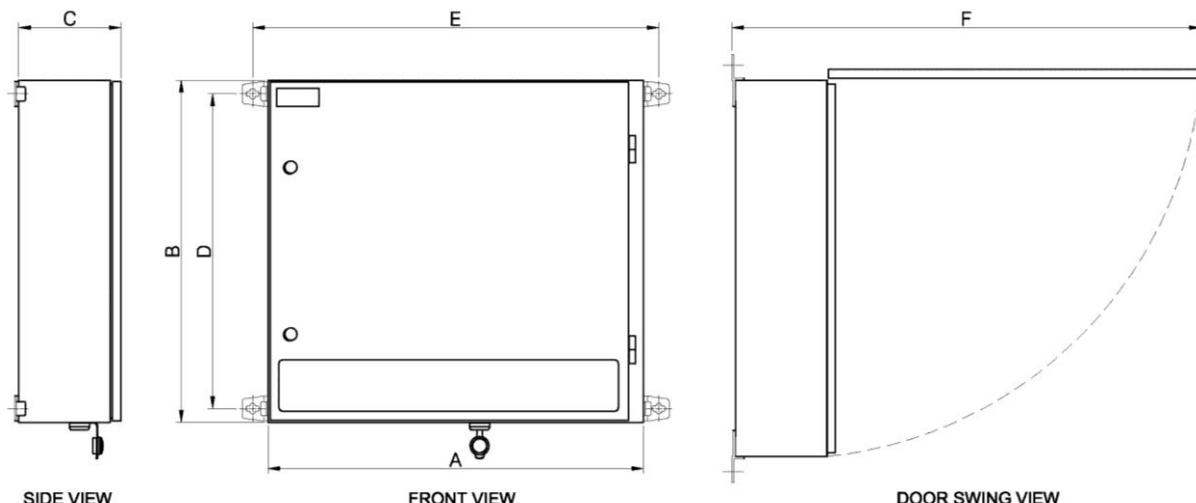
## SFP GENERAL ARRANGEMENT



## 2 INSTALLATION GUIDE

**Important : All installation and maintenance work must be carried out by suitably qualified personnel only. All wiring must be carried out in accordance with latest NEC, CEC or IEC requirements and current local regulations.**

### SFP ENCLOSURE DIMENSIONS AND FITTING GUIDE



SFP	A	B	C	D	E	F	WEIGHT
Metric (mm)	550	500	150	460	595	640	20Kg
Imperial (In)	21.7	19.7	5.9	18.1	23.4	25.2	44lb

The monitor has been designed to comply with IP54. This is not intended for external use. Where possible the enclosure and cabling should be positioned in areas with similar environmental conditions

#### Enclosure Fitting Guide

1. It must be mounted to a solid vertical surface or structure capable of supporting the stated weight. We recommend the surface be built from concrete blocks or brick. It must be positioned where the door can be fully opened and in a location that facilitates easy service and maintenance. The top of the enclosure should not be fitted higher than 1.8m (6ft) above floor level.
2. Four fixing brackets are supplied loose with the monitor. They can be fitted vertically or horizontally. Choose the appropriate orientation, insert the bolt and nylon washer through the enclosure from the inside and tighten the bolts into the mounting brackets.
3. Fixings should be 4mm (1/8") or 5mm (3/16") screws or bolts minimum 40mm (1.5") long with plain washers and suitable wall plugs
4. The enclosure is designed for cable entry from below. It has pre-drilled knock-outs for cabling. Ensure the mains cable uses the knock-out in the left end of the enclosure directly below the circuit breaker. If access is required from the side or above then the fitting must be of such a type to prevent ingress of moisture and dust. Failure to do so could invalidate the warranty.

**See the appendix at the back of the manual for full installation diagrams**

## SFP ELECTRICAL REQUIREMENTS

The SFP requires an earthed, AC three phase mains supply in the range 208 to 480 volts, 50/60 Hz protected by a 10A DB MCB over-current circuit breaker in accordance with local electrical regulations. The supply to the SFP should be at the same voltage potential as the electrical circuits that are to be monitored, from the suitably marked disconnect device. The device must have 3mm contact gaps and disconnect all poles.

### IMPORTANT:

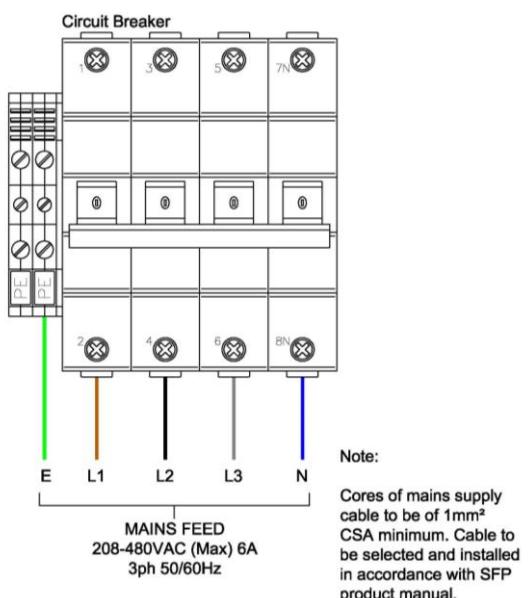
A UL Listed Voltage Suppressor must be installed before the SFP, between the three phases and neutral to earth with minimum ratings of 2500Vpk, type 2 suitable for the system voltage. All voltage suppressor wiring should be in accordance with the manufacturer's instructions.

In the SFP, it is essential that the correct phase orientation is adhered to, phase 1 to L1, phase 2 to L2, phase 3 to L3 and neutral to N. Terminate the protective earth conductor to the dedicated terminal adjacent to the circuit breaker in the panel

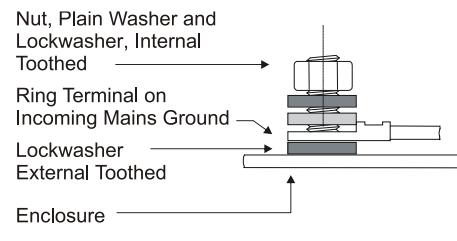
The final connections should be made with an approved cable (5 core 1mm<sup>2</sup> Controlflex Y-Y or similar) incorporating a water tight strain relief bush through the enclosure. All cabling should be suitably protected in EMC conduit.

**All mains wiring connections should be readily inspected after the equipment is installed prior to power-up**

Mains wiring in the SFP should be as per the following diagram:



### Single Ground Earth Screw



**Note : Circuit breaker terminals tightening torque 2lb.ft (2.8Nm)**

Run a CAT5 ethernet cable from the remaining Ethernet connection on the door-mounted PC to the Wide Area Network.

Cable used shall be RATED for the maximum current of the equipment, and shall be certified or approved by a recognized testing authority. The cable anchorage shall relieve the conductors of the cable from strain, including twisting, where they are connected within the equipment, and shall protect the insulation of the conductors from abrasion. The protective earth conductor, if any, shall be the last

to take the strain if the cable slips in its anchorage. Cable anchorages shall meet the following requirements:

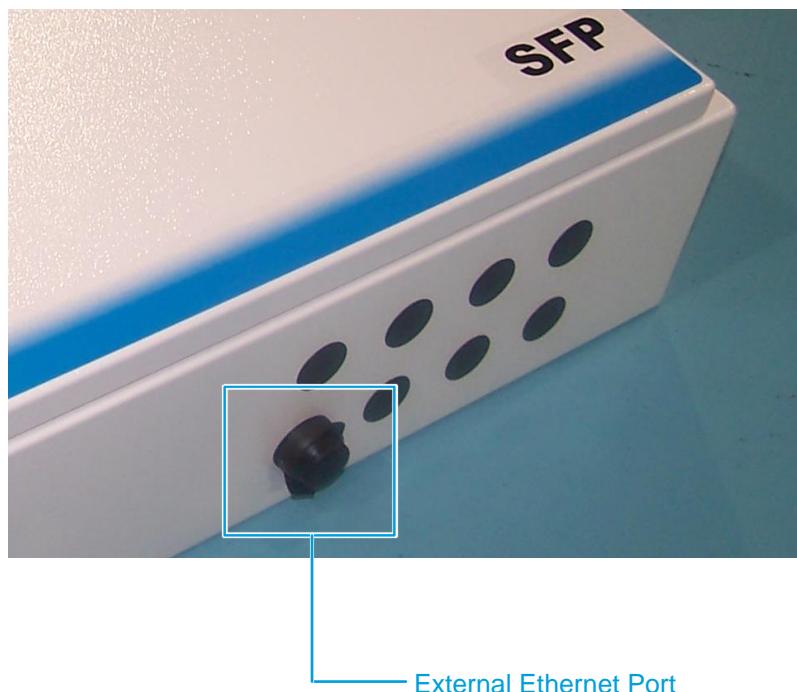
- a) The cable shall not be clamped by a screw which bears directly on the cable.
- b) Knots in the cable shall not be used.
- c) It shall not be possible to push the cable into the equipment to an extent which could cause a hazard.
- d) Failure of the cable insulation in a cable anchorage which has metal parts shall not cause accessible conductive parts to become hazardous live.
- e) It shall not be possible to loosen the cable anchorage without the use of a tool.
- f) It shall be designed so that cable replacement does not cause a hazard, and it shall be clear how the relief from strain is provided.

A compression bushing shall not be used as a cable anchorage unless it is suitable for use with the mains supply cable supplied with it or specified for it by the manufacturer.

## **EXTERNAL COMMUNICATIONS**

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An external Ethernet port is provided for access to a LAN or WAN connection. This is located on the underside of the SFP enclosure:

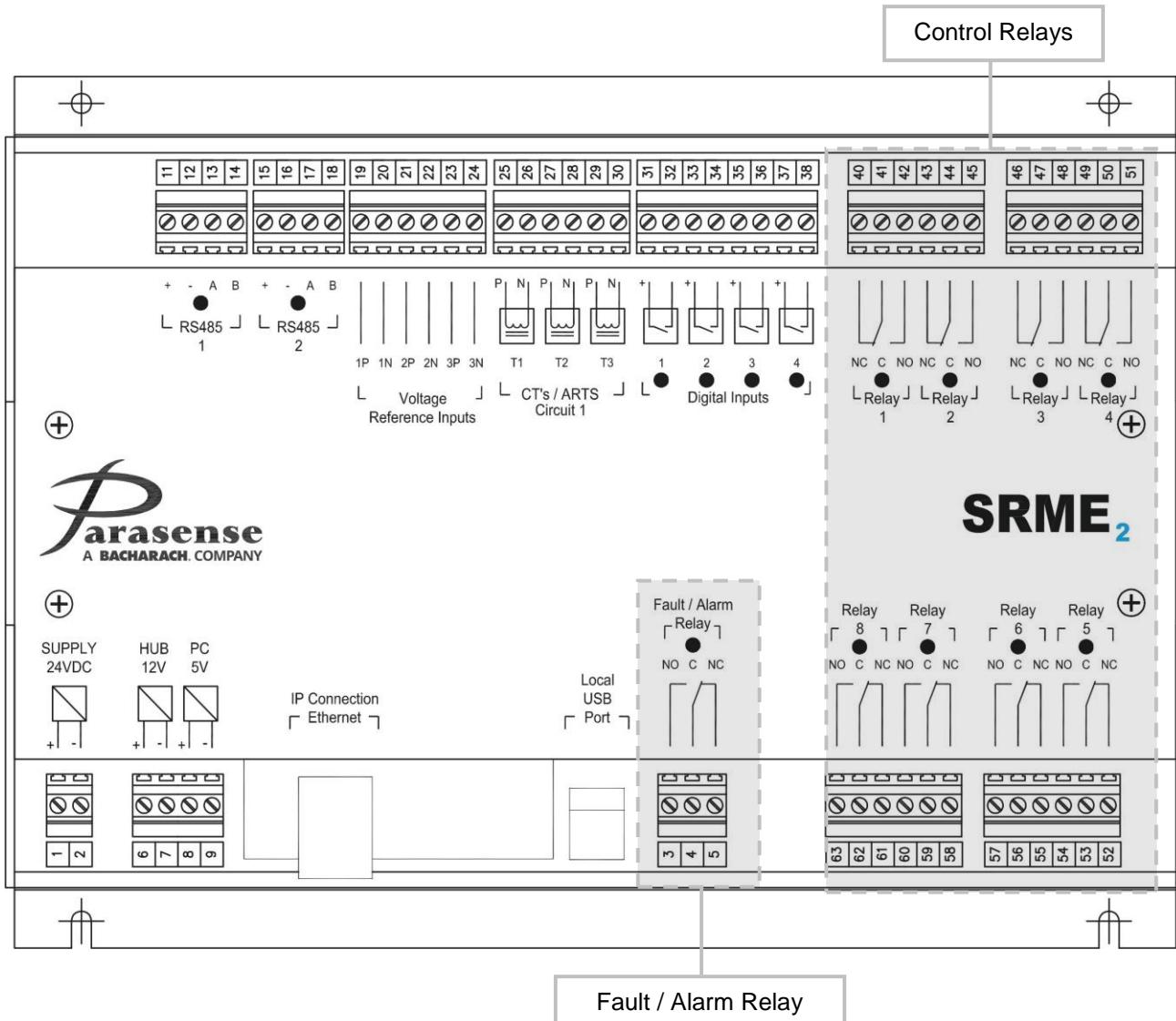


## SFP RELAY CONNECTIONS

Control relays: 8 separate volt-free changeover relays are available on the SFP network module, rated at 6A AC or 5A DC (resistive). Contact voltages should not exceed 277V AC or 30V DC

Fault/Alarm relay: a separate volt-free changeover relay is available on the SFP network module, rated at 6A AC or 5A DC (resistive). Contact voltages should not exceed 277V AC or 30V DC.

Relays suitable for connection to overvoltage category II equipment only.



## SFP DIGITAL INPUTS/PULSE COUNTERS

Four dual purpose inputs, designed to be used with volt-free contact signalling devices, are available on the SFP/SRME2. Connection information is shown in *Figure 1* below.

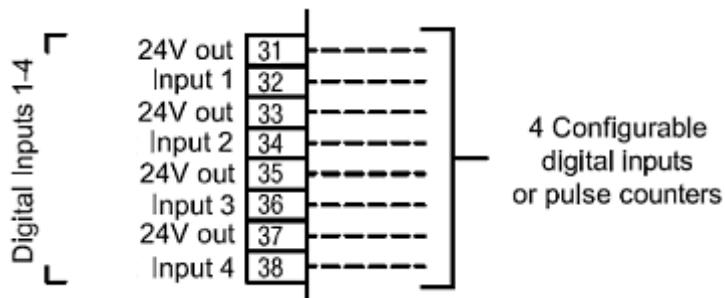


Figure 1

Each input has associated with it a 24V DC output and a 0 - 24V DC input. Signal debounce is provided to ensure accurate pulse counting. The debounce time can be configured separately for each input.

The specifications & requirements of each connection pair are as listed in *Table 1* below.

24V out (for use with volt-free contacts)	
Output voltage	24V DC
Current limit (per output)	20mA

Input 1 to 4	
Input voltage	0 – 24V DC
Logical '0' input voltage level	< 2.0V
Logical '1' input voltage level	> 5.0V
Maximum pulse frequency	1 KHz
Minimum pulse duration	500us
Configurable debounce time	0 – 100ms

Table 1

## SART (SPLIT AUTO-RANGING TRANSFORMER) DETAILS



Example of 2000A  
SART

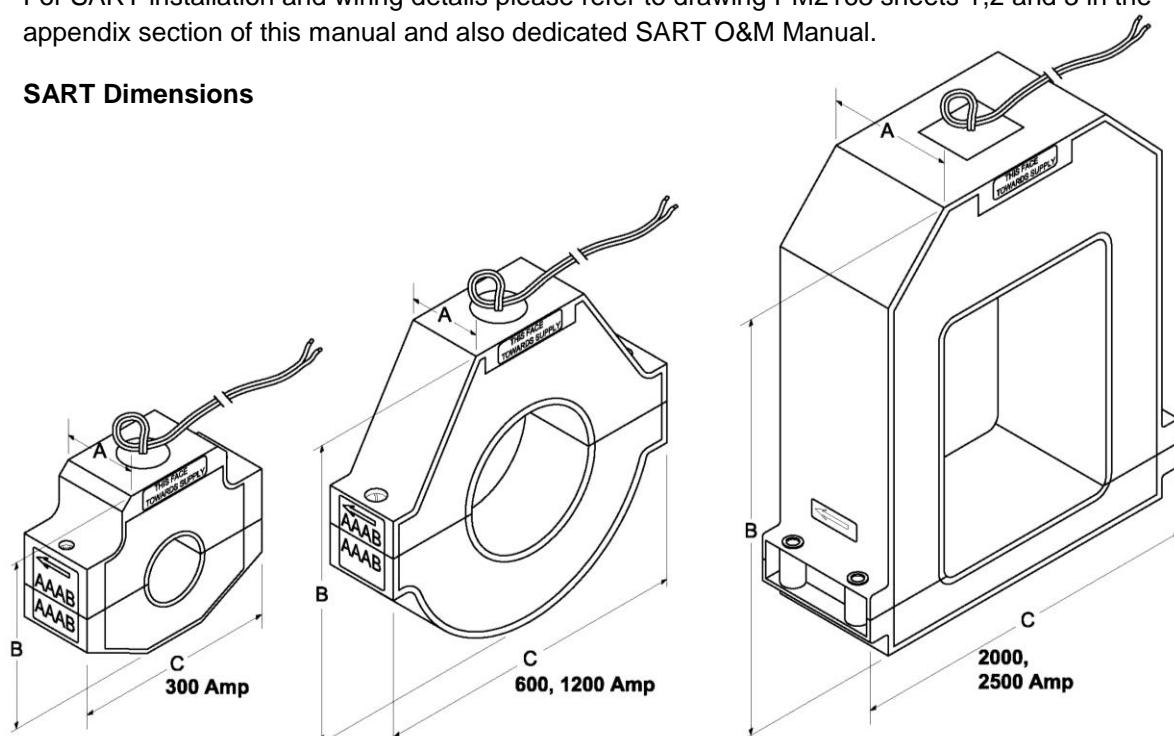


Example of 1200A  
SART

Parasense SARTs are available for 300A, 600A, 1200A, 2000A and 2500A circuits

For SART installation and wiring details please refer to drawing PM2163 sheets 1,2 and 3 in the appendix section of this manual and also dedicated SART O&M Manual.

### SART Dimensions



Model	A	B	C	Hole Size
<b>300A</b>	1.4 (35)	3.2 (80)	3.8 (97)	1.1 (28) diameter
<b>600A</b>	1.4 (35)	4.7 (120)	5.2 (132)	1.9 (48) diameter
<b>1200A</b>	1.4 (35)	5.5 (140)	6 (152)	2.5 (63) diameter
<b>2000A</b>	2.4 (60)	7.9 (200)	6.8 (172)	3.6 x 4.8 (92 x 122)
<b>2500A</b>	2.4 (60)	9.9 (250)	8.8 (222)	5.6 x 6.8 (142 x 172)

Dimensions in inches (brackets in mm)

# ENVIRONMENTAL SENSOR INSTALLATION

Environmental sensors can be installed to monitor light, temperature and relative humidity. Multiple sensors can be connected via an RS485 network. Refer to Cluster Point Networking for further details on networks.



External Temperature / Humidity Sensor



Internal Temperature / Humidity Sensor

## Internal Environmental Sensor

Locate the internal sensor approximately 2.5 to 3.0 metres above the floor. The sensor should not be mounted on an external wall or near a heat source

## External Environmental Sensor

In order to avoid inaccurate temperature and humidity readings, it is essential that the external sensors are installed in a location that is:

1. Shaded from sun all day, preferably on a north-facing wall
2. Well ventilated to avoid heat build up
3. Away from potential heat sources such as condensers, ventilation ducts, AHUs etc
4. Away from reflective surfaces
5. At least 2 metres above the surface

## General Mounting Instructions

The external environmental sensor is housed in an IP66/NEMA 4X rated enclosure. It must be mounted to a solid vertical surface capable of supporting its weight. For full fitting instructions please refer to drawings PM1791 and PM1898 in the appendix section of this manual

Ensure the sensors are mounted where the environmental conditions are within; Temperature:-30°C/-22°F to +55°C/+131°F. Humidity: 0% to 100%, Non-condensing.

## Wiring Instructions

For full wiring instructions please refer to drawings PS0639 and PS0693 in the appendix section of this manual

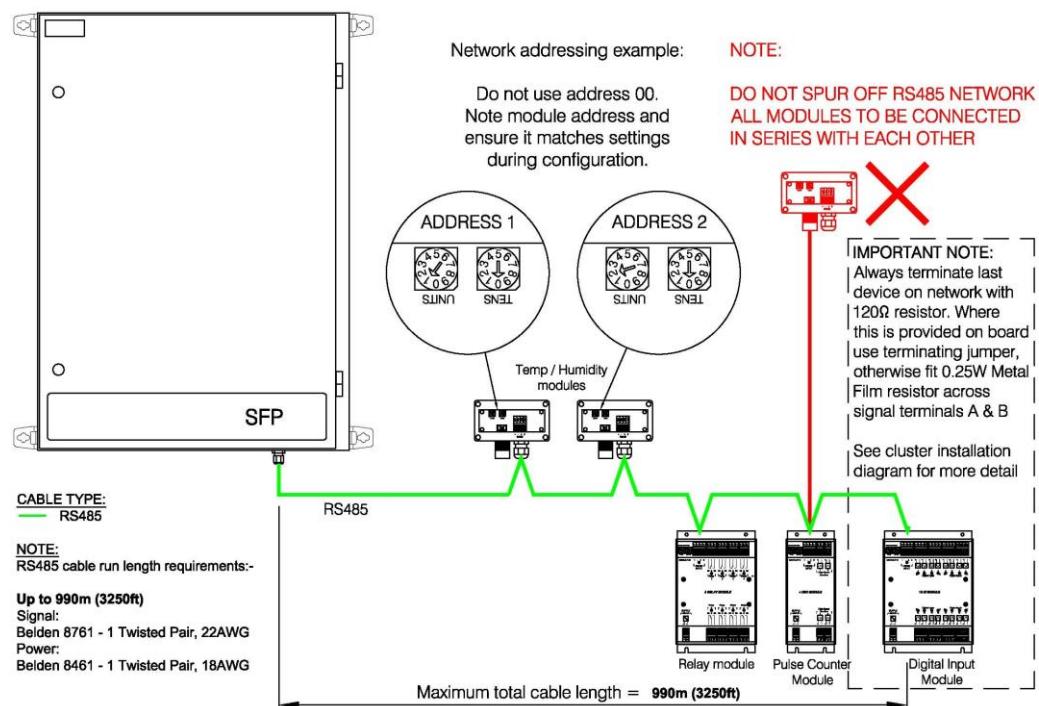
## CLUSTER POINT NETWORKS

The network can accommodate multiple cluster points. Total number of cluster points available are dependent on the individual site application. For more details contact Parasense.

Each cluster point has two rotary switches enabling you to assign a unique ID number. ID numbers 01 to 99 can be assigned (Note: 00 should never be used as an ID). ID numbers do not need to follow a sequential pattern, they can be assigned in any order that you wish, but it is suggested that ID's are assigned in sequence to make the installation easier to understand.

Network installations must always be installed in series with no spur connections. The maximum possible network length is 990 metres provided that the specified cable is used and the cable is properly terminated. The diagram below outlines the method to be used when creating a network of cluster points (which includes environmental sensors, digital inputs and relay outputs etc)

**Cluster Point Network Diagram**



## 3 SERVICE & MAINTENANCE

Parasense warrants this monitor for a period of one year from the date of purchase against defects in materials and workmanship. This warranty will not apply to defects resulting from the non-compliance with this manual, over-voltage, physical abuse, ingress of water or tampering with individual items. Use of equipment in a manner not specified by the manufacturer may impair the protection afforded by the equipment.

Parasense offers a wide range of service and maintenance contracts, remote access software and management reporting packages. Details and cost of service exchange units can be obtained from Parasense or their approved distributor.

The SFP monitor comprises eight basic building blocks:

- 1) Monitor enclosure
- 2) Enclosure door
- 3) Circuit breaker
- 4) Power supply
- 5) Network module
- 6) PC
- 7) Voltage reference module
- 8) Ethernet hub



## REPLACING THE ENCLOSURE DOOR

Switch off the mains supply to the SFP and wait for a few seconds while the power supply discharges. Open the door with the key provided, switch off at the internal circuit breaker (1) (see Figure 2.0).

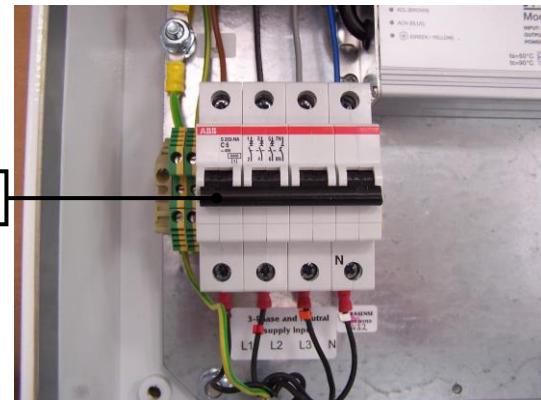


Fig 2.0

Unplug all connections to the PC (2) then unscrew the four fixing nuts that hold the PC to the door (3) (see Figure 2.1).

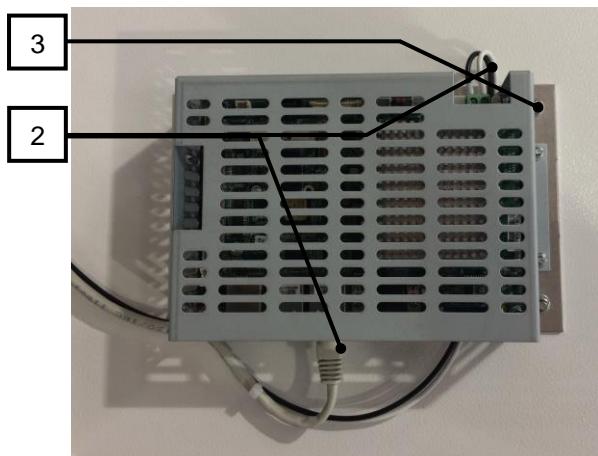


Fig 2.1

Disconnect the earth strap (4) (see figure 2.2).

If there is one fitted, remove the anti-lift peg located above the lower hinge (5) (see Figure 2.2). The door can now be lifted off and a new one hung in place.

Replace the anti-lift peg. Reconnect the PC connections. Checking all connections are secure, close the internal circuit breaker and reinstate mains supply.



Fig 2.2

## REPLACING THE NETWORK MODULE

Switch off the mains supply to the SFP and wait for a few seconds while the power supply discharges. Open the door with the key provided, switch off at the internal circuit breaker (1) (see Figure 3.0).

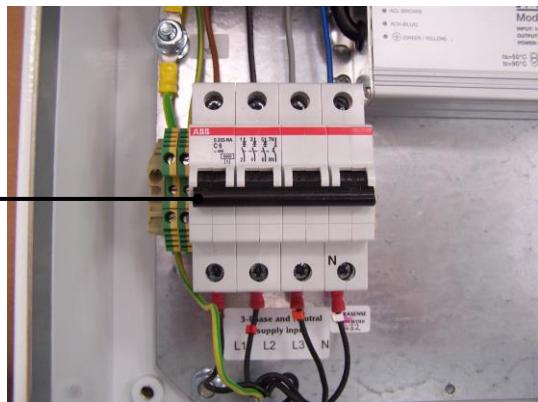


Fig 3.0

Noting the sequence -  
Disconnect the mains power supply cables (2), cables to the hub and door mounted PC (3) then any other wired in connectors (4). Unscrew the four screws holding the Network Module in position (5). The module can now be removed from the enclosure (see Figure 3.1).

Position the new Network Module and tighten the four fixing screws. Securely reconnect all of the cables previously disconnected. Close the internal circuit breaker, lock the enclosure door and reinstate the mains supply.

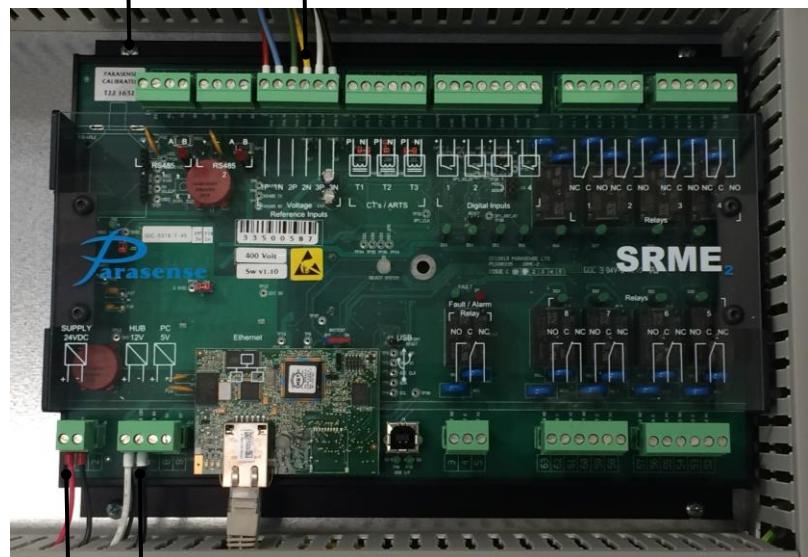


Fig 3.1

## REPLACING THE VOLTAGE REFERENCE MODULE

Switch off the mains supply to the SFP and wait for a few seconds while the power supply discharges. Open the door with the key provided, switch off at the internal circuit breaker (1) (see Figure 4.0).

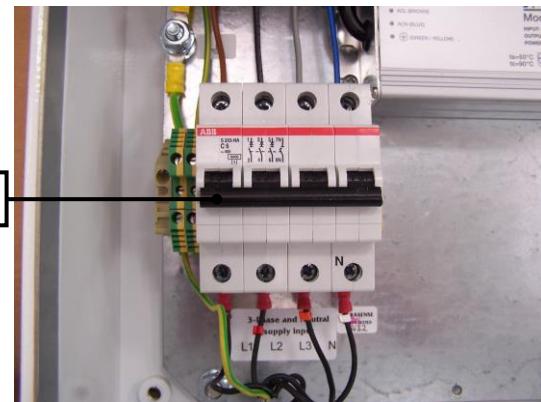


Fig 4.0

Disconnect the power input connections (2) and all output connections (3). Unscrew the four fixing screws (4) holding the voltage reference module in place and remove from the enclosure. (see Figure 4.1).

Position the new voltage reference module and tighten the four fixing screws. Securely reconnect all of the cables previously disconnected. Close the internal circuit breaker, lock the enclosure door and reinstate the mains supply.

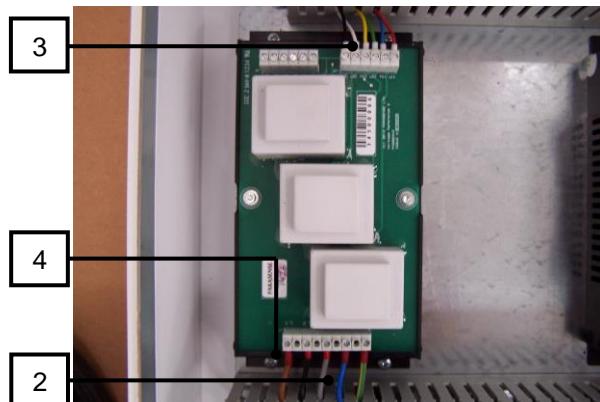


Fig 4.1

## REPLACING THE POWER SUPPLY UNIT

Switch off the mains supply to the SFP and wait for a few seconds while the power supply discharges. Open the door with the key provided, switch off at the internal circuit breaker (1) Noting the sequence, disconnect the supply cables to the PSU (2) (see Figure 5.0).

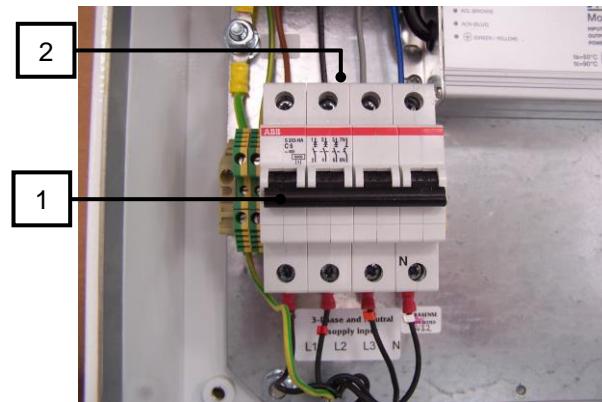


Fig 5.0

Noting the sequence, disconnect the 24V DC supply cables to the network module (3) (see Figure 5.1).



Fig 5.1

Unscrew the four fixing screws that holds the PSU in place (4) (see Figure 5.2). The PSU can now be removed from the enclosure.

To install the new PSU, screw into position. Reconnect the wiring, close the internal circuit breaker, lock the enclosure door and reinstate the mains supply.



Fig 5.2

## REPLACING THE CIRCUIT BREAKER

Switch off the mains supply to the SFP and wait for a few seconds while the power supply discharges. Open the door with the key provided, switch off at the internal circuit breaker (1) (see Figure 6.0).

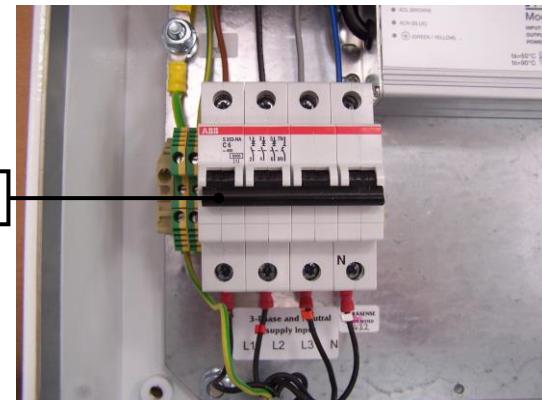


Fig 6.0

Noting the sequence - Disconnect the mains supply cables (2) followed by the output cables (3) (see Figure 6.1).

Slide the securing tab out that holds the circuit breaker in place (4) (see Figure 6.1). The circuit breaker can now be removed from the enclosure.

To install the new breaker, clip onto the din rail by sliding the securing tab out. Reconnect the output wiring, then the mains in connections. Close the internal circuit breaker, lock the enclosure door and reinstate the mains supply.

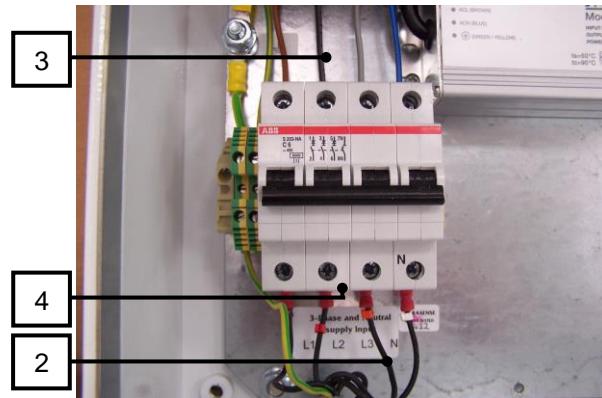


Fig 6.1

## 4 SPECIFICATION

### Models SFP-104-108/SFP-104-108US, SFP-104-116/SFP-104-116US

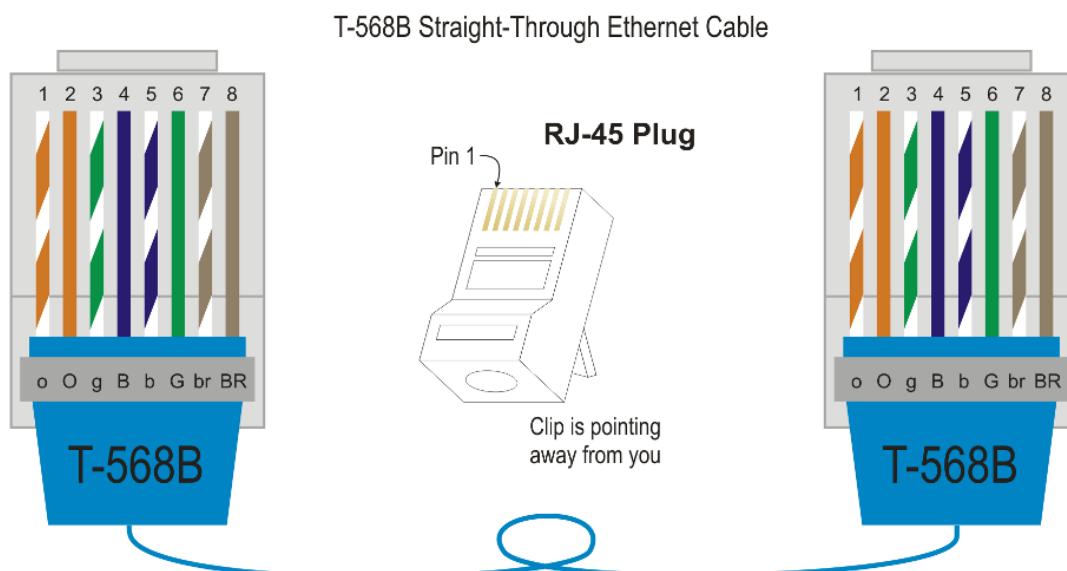
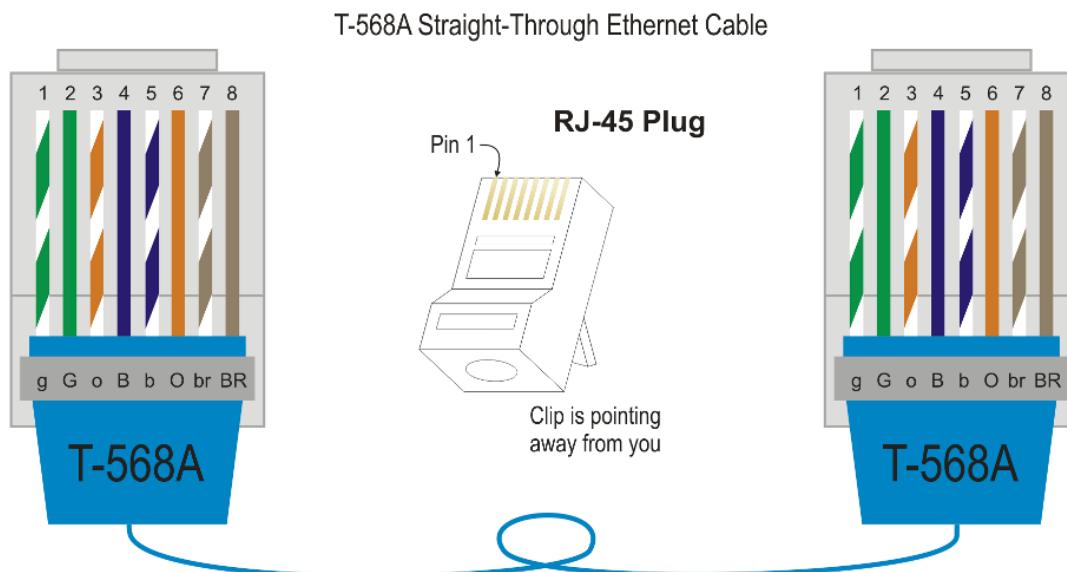
<b>Power</b>	120/208, 230/400, 277/480 VAC, 170VA, 50/60Hz Overvoltage Category III
<b>Ethernet</b>	WAN : 10/100 Base-T RJ45 Socket LAN : 10/100 Base-T RJ45 Sockets x 6 (-108/US) x 14 (-116/US)
<b>USB</b>	USB2.0, Type B Socket
<b>Fault/Alarm Relay</b>	Volt free, change-over Max switching voltage: 277V AC / 30V DC Max switching current: 6A AC / 5A DC (resistive)
<b>Output Relays</b>	Volt free, change-over Max switching voltage: 277V AC / 30V DC Max switching current: 6A AC / 5A DC (resistive)
<b>Cluster Networks 1 and 2</b>	RS485 communication Network power: 24V DC max 650mA Baud rate: 115 Kbps Number of cluster points dependent on application
<b>Current Measurement SART's</b>	Current range: (per phase) 2 to 2500A Secondary range: 0 to 150mA Open circuit protection provided Accuracy: better than 1% Revenue grade: complies with ANSI C12.1-2008 Measurement category III
<b>Voltage Reference</b>	120/208, 230/400, 277/480 three phase, 50/60Hz
<b>Pulse Counters/Digital Inputs</b>	Outputs (for use with volt-free contacts): Up to 24V DC, max 20 mA Input: 0-24V DC Max. pulse frequency: 1 kHz Min. pulse duration: 500 µs Logic '0' < 2V ; Logic '1' > 5V
<b>Operating Conditions</b>	Operating temperature: 0°C to 50°C (32°F to 123°F) Storage temperature: -23°C to 65°C (-9°F to 150°F) Relative Humidity: 20 to 95% RH (non-condensing) Pollution degree 2 Altitude up to 2000m (6560ft) Indoor Use Only
<b>Overcurrent Protection</b>	10A DP MCB
<b>Enclosure Rating</b>	IP54 / NEMA 12
<b>Approvals</b>	EN61010:2010 UL61010-1 CSA C22.2 61010-1

## 5 APPENDIX

### ETHERNET CABLE DETAIL

The information listed here is to assist Network Administrators in the colour coding of Ethernet cables. Please be aware that modifying Ethernet cables improperly may cause loss of network connectivity. Two wiring styles are available for straight-through connections.

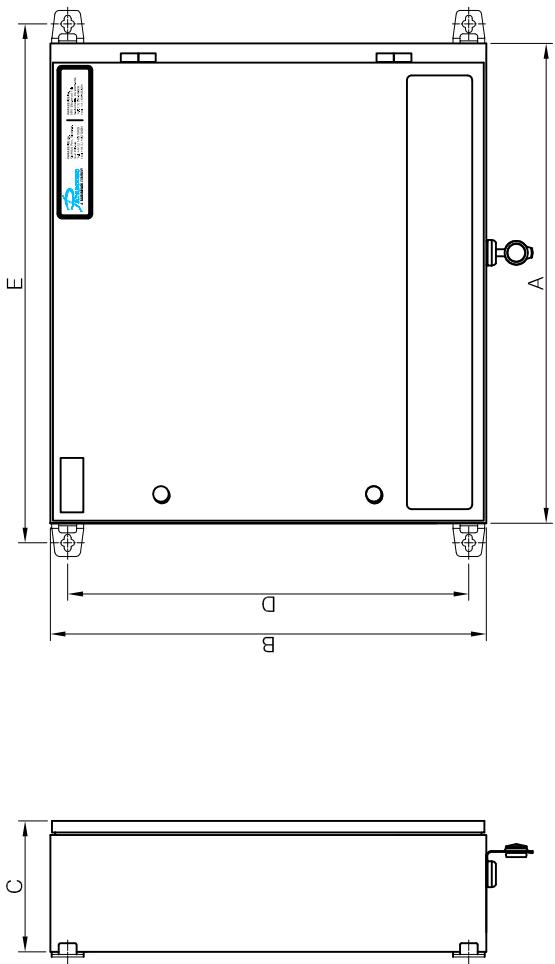
The T-568A standard is supposed to be used in new network installations. Most off-the-shelf Ethernet cables are still of the T-568B standard. It makes no functional difference which you choose.



## **SFP PANEL MOUNTING DETAILS (PM1817)**

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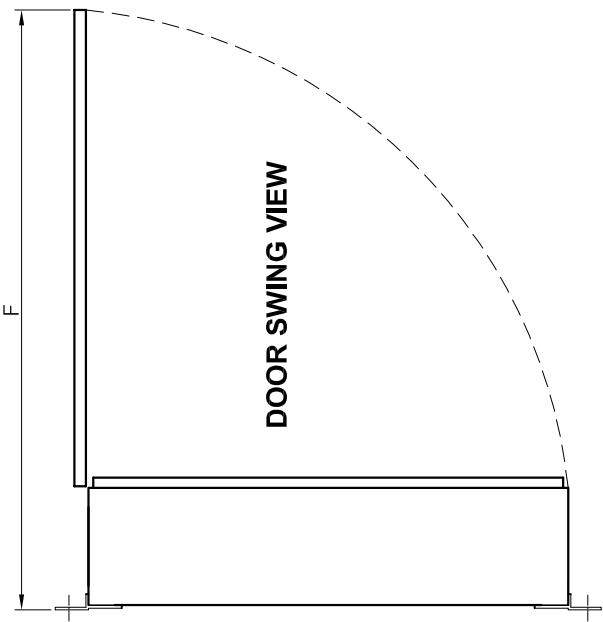
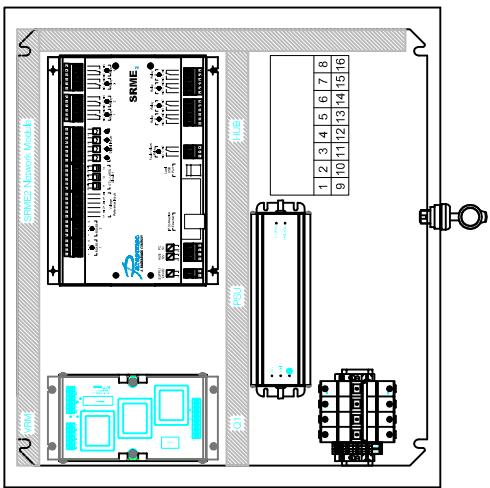
## SIDE VIEW



**DIMENSIONS**

MODEL - SFP	A	B	C	D	E	F	WEIGHT
Metric (mm)	550	500	150	460	595	640	20kg
Imperial (inches)	21.7	19.7	5.9	18.1	23.4	25.2	44lb

## INTERNAL VIEW



**DOOR SWING VIEW**

## MOUNTING INSTRUCTIONS

1. The SFP is housed in an IP54 / NEMA 12 rated enclosure. It must be mounted to a solid vertical surface or structure capable of supporting the stated weight. We recommend the surface be built from concrete blocks or brick. It must be positioned where the door can be fully opened, and in a location that facilitates easy service and maintenance. The top of the enclosure should not be fitted higher than 1.8m (6ft) above floor level.

2. Four fixing brackets are supplied with the monitor. They can be fitted vertically or horizontally. Choose the appropriate orientation, insert the bolt and nylon washer through the enclosure from the inside and tighten the bolts into the mounting brackets.

3. Fixings should be 4mm (1/8") or 5mm (3/16") screws or bolts minimum 40mm (1.5") long with plain washers suitable for wall plugs.

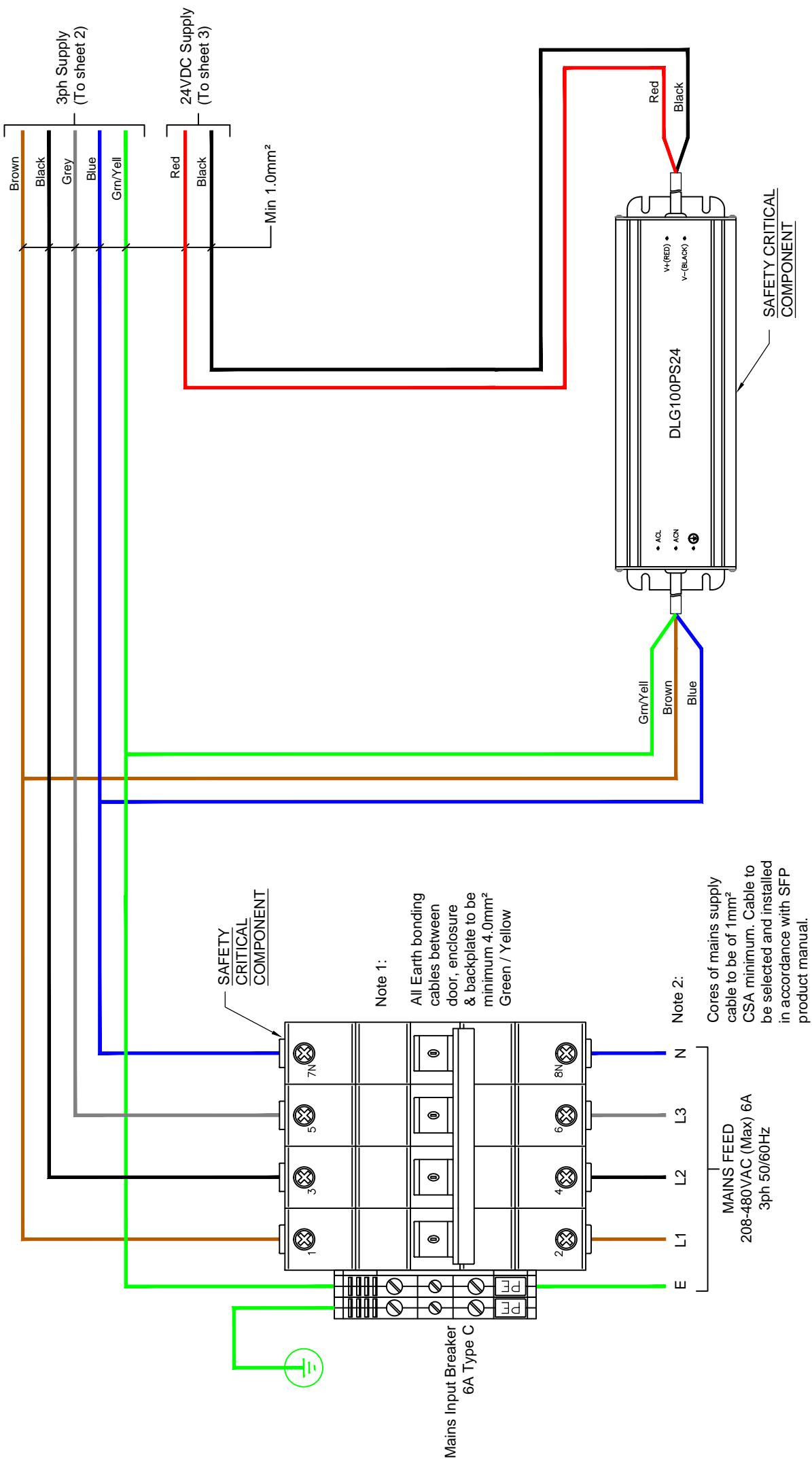
4. The enclosure is designed for cable entry from below. It has pre-drilled knock-outs for cabling. Ensure the mains cable uses the knock-out in the left end of the enclosure directly below the circuit breaker. If access is required from the site or above then the fitting must be of such a type to prevent ingress of moisture or dust. Failure to do so could invalidate the warranty

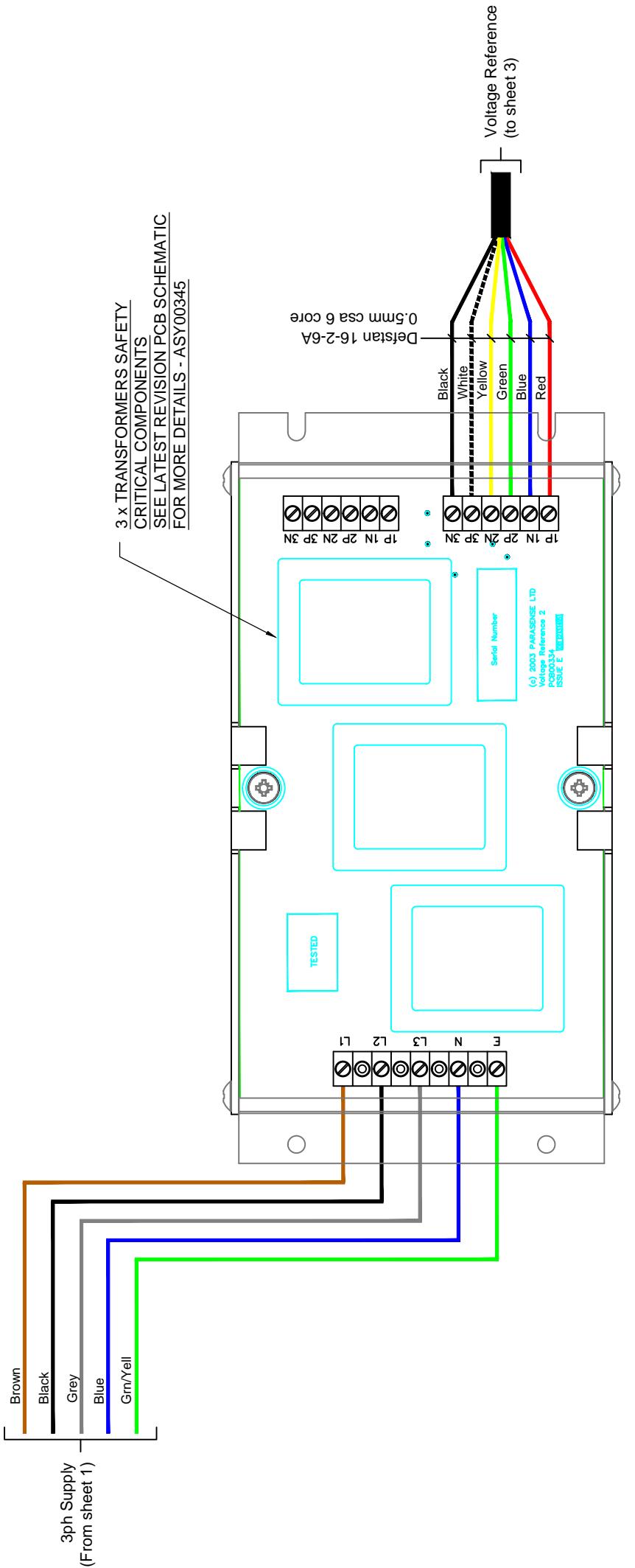
5. Ensure the panel is mounted where the environmental conditions are within; Temperature 0°C/+32°F to +50°C/+123°F. Humidity: 20% to 95%, non-condensing

revision:	<b>PM1817</b>	drawing number:	8. Old door-mounted ethernet port removed. JW 29/09/16
revision:	9. Drawing border updated. Stepwise branding removed. JW 23/02/17	sheet:	AK
revision:	10. Branding and drawing border updated. JW 28/03/18	sheet:	JB
drawn:	David Seal	date:	23rd Dec 2010
part number:	.....		

## **SFP WIRING SCHEMATICS (PS0705)**

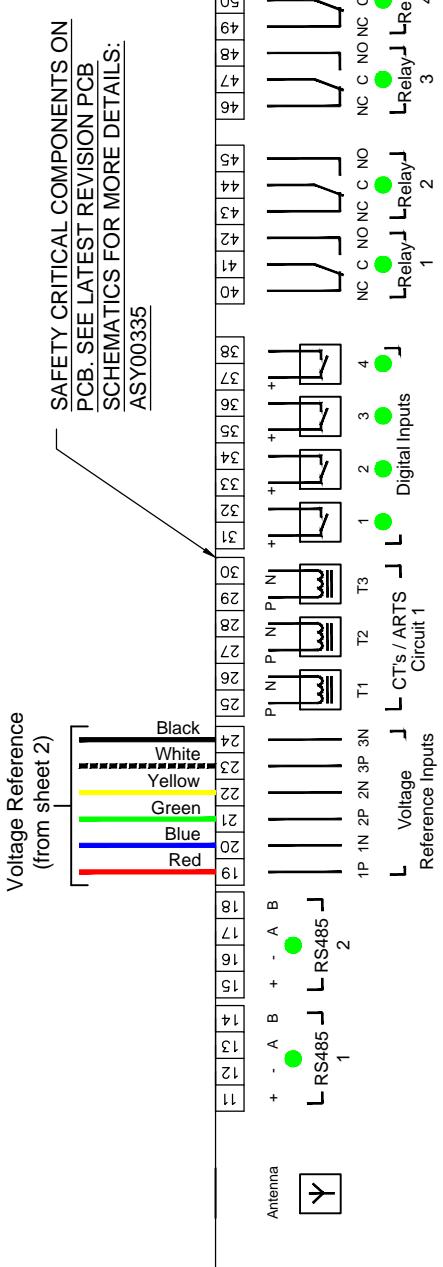
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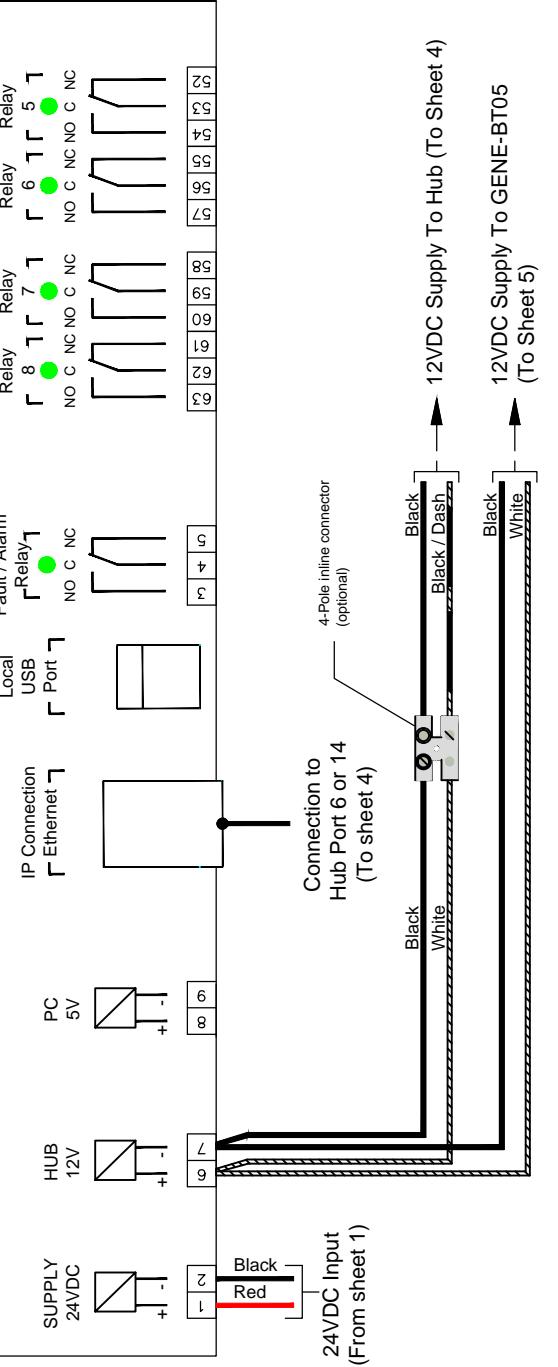
<b>PARASENSE Ltd.</b> Olympus Park, Gloucester, GL2 4NF, UK. Tel: +44 (0) 1452 724123. Fax: +44 (0) 1452 724234	<b>PARASENSE Inc.</b> 9661 Spotswood Trail, Standardsville, VA 22973, USA Tel: +(1) 540-948-9919. Fax: +(1) 434-990-9214.	<b>title:</b> <b>SFP-104-108/116 &amp; US Connection Schematic</b>	<b>drawing number:</b> <b>PSO705</b>	<b>checked:</b> AK JB GR
<b>drawn:</b> David Seal 3rd Nov 2011	<b>date:</b> 3rd Nov 2011	<b>part number:</b> 14	<b>revision:</b> 14	<b>sheet:</b> 2 of 5

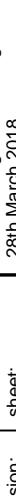
RM<sup>2</sup>



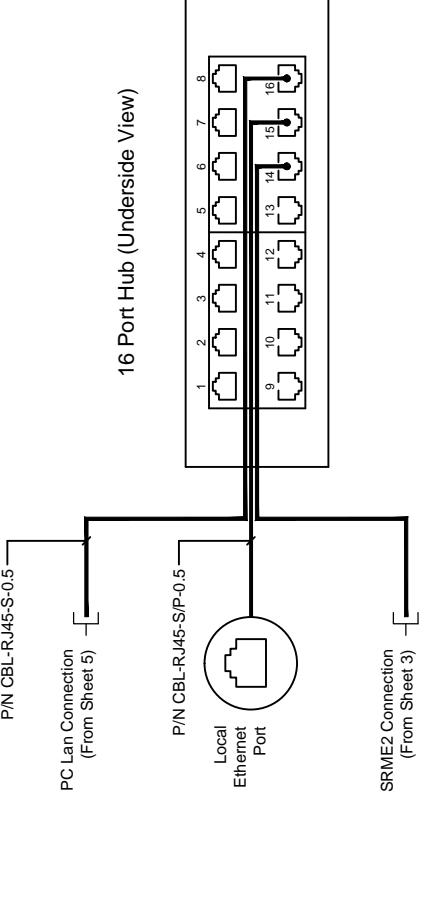
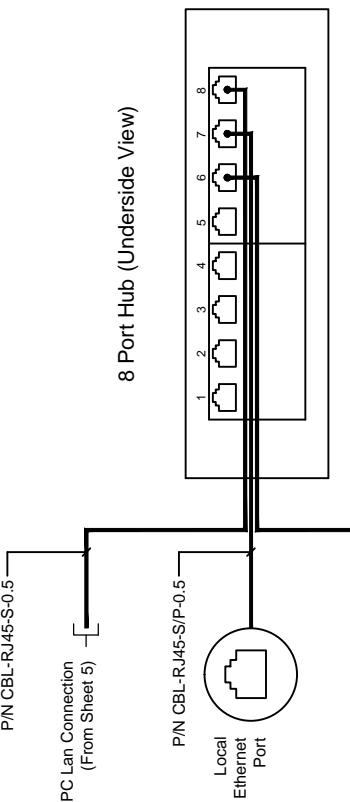
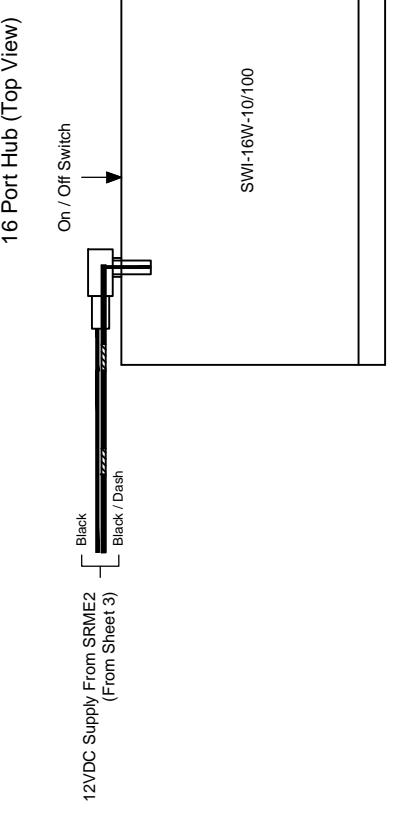
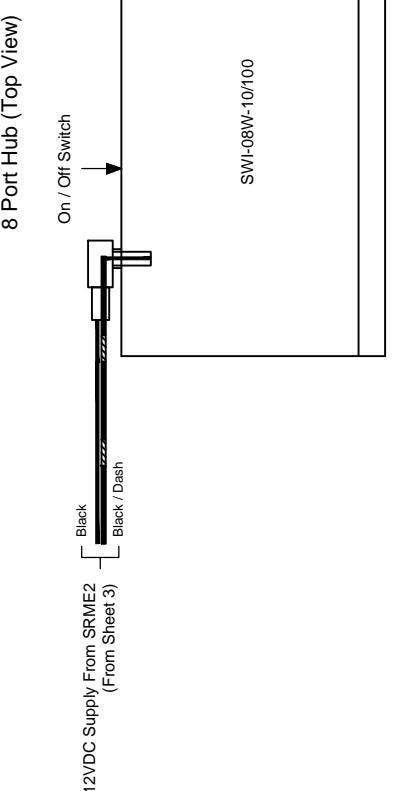
SRME<sup>2</sup>

SRM**E**2-100-108US  
Main Board



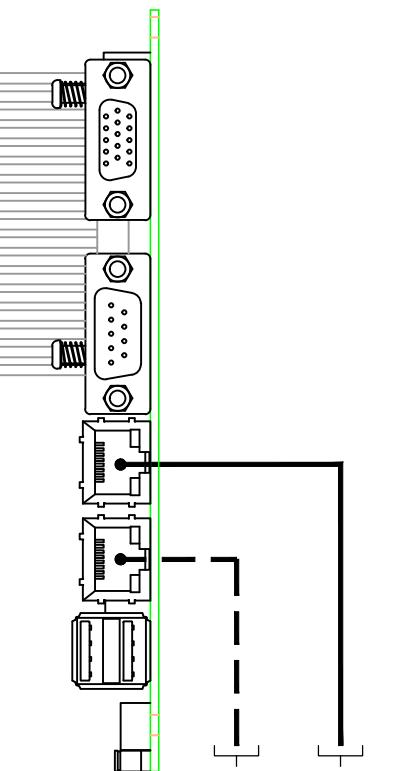
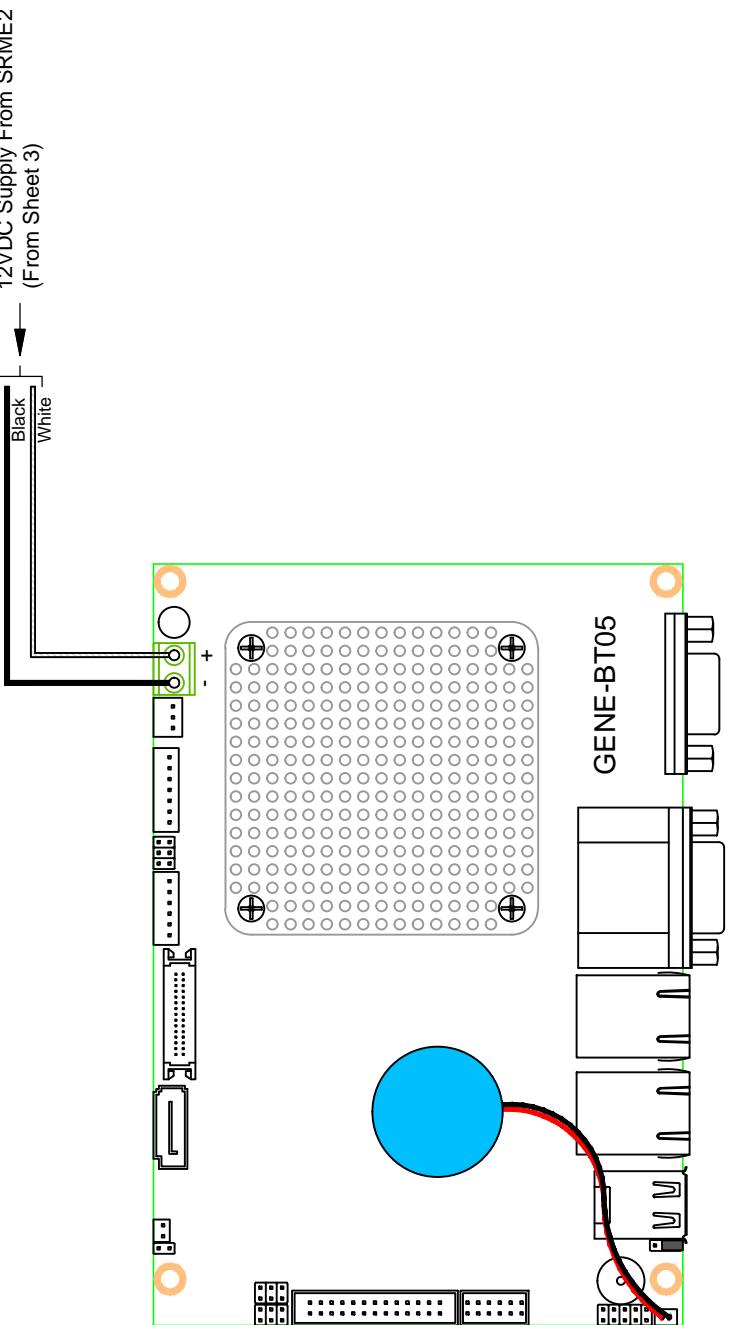
 <b>A BACHARACH COMPANY</b>	PARASENSE Ltd. Olympus Park, Gloucester, GL2 4NF, UK. Tel: +44 (0) 1452 724123. Fax: +44 (0) 1452 724234	PARASENSE Inc. 9661 Spotswood Trail, Stanardsville, VA 22973, USA Tel: +(1) 540-948-9919. Fax: +(1) 434-990-9214.	title: <b>SFP-104-108/116 &amp; US Connection Schematic</b>	drawing number: <b>PS0705</b>	revision: 12. Drawing border update. Stepwise branding removed. JW 23/02/2017	checked: AK	
					revision: 13. Branding and drawing border updated. JW 28th March 2018	checked: JB	
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Loc. Ref: H105-4 09/03/18							

# RM<sub>2</sub>



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<b>A BACHARACH. COMPANY</b>	This drawing and design is the copyright of <b>PARASENSE</b> and must not be copied or reproduced without their written permission		<b>revision:</b> <b>14</b>	<b>sheet:</b> <b>4 of 5</b>
			<b>date:</b> 3rd Nov 2011	<b>part number:</b> David Seal
				Doc. Ref: H1054.09/03/18

# RM<sub>2</sub>



<b>PARASENSE Ltd.</b> Olympus Park, Gloucester, GL2 4NF, UK. Tel: +44 (0) 1452 724123. Fax: +44 (0) 1452 724234	title: <b>SFP-104-108/116 &amp; US Connection Schematic</b>	
	9661 Spotswood Trail, Standardsville, VA 22973, USA Tel: +(1) 540-948-9919. Fax: +(1) 434-990-9214.	part number: .....
<b>PARASENSE Inc.</b> 9661 Spotswood Trail, Standardsville, VA 22973, USA Tel: +(1) 540-948-9919. Fax: +(1) 434-990-9214.	drawn: David Seal date: 3rd Nov 2011	revision: <b>14</b> sheet: <b>5 of 5</b>

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checked: AK	revision: 12. Drawing border update. Stepwise branding removed. JW 23/02/2017
checked: JB	revision: 13. Branding and drawing border updated. JW 28th March 2018
checked: GR	revision: 14. "Door Mounted" removed from local ethernet port. PJ 29-Mar-19

## **CLUSTER NETWORK CONNECTIONS (PS0663)**

---

NOTE:

DO NOT SPUR OFF RS485  
NETWORK  
ALL MODULES TO BE  
CONNECTED IN  
SERIES WITH EACH OTHER



RM2 Panel

Network addressing  
example:

Do not use address 00.

Note module address and  
ensure it matches settings  
during configuration.

ADDRESS 1



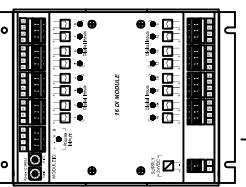
Temp / Humidity  
module

Temp / Humidity  
module

ADDRESS 2



Temp / Humidity  
module



IMPORTANT NOTE:  
See cluster installation  
diagram for more detail

revision:  
6. Drawing border updated. JW 4th Feb 2016

checked:  
AK

revision:  
7. Drawing border updated. JW 21st Feb 2017

checked:  
AK

revision:  
8. Drawing border updated. JW 21st Feb 2017

checked:  
AK

**PS0663**

drawing number:  
**PS0663**

revision:  
**8**

sheet:  
**1 of 1**

CABLE TYPE:  
RS485

NOTE:  
RS485 cable run length requirements:-

**Up to 990m (3250ft)**  
Signal - Belden 8761 - 1 Twisted Pair, 22AWG  
Power - Belden 8461 - 1 Twisted Pair, 18AWG

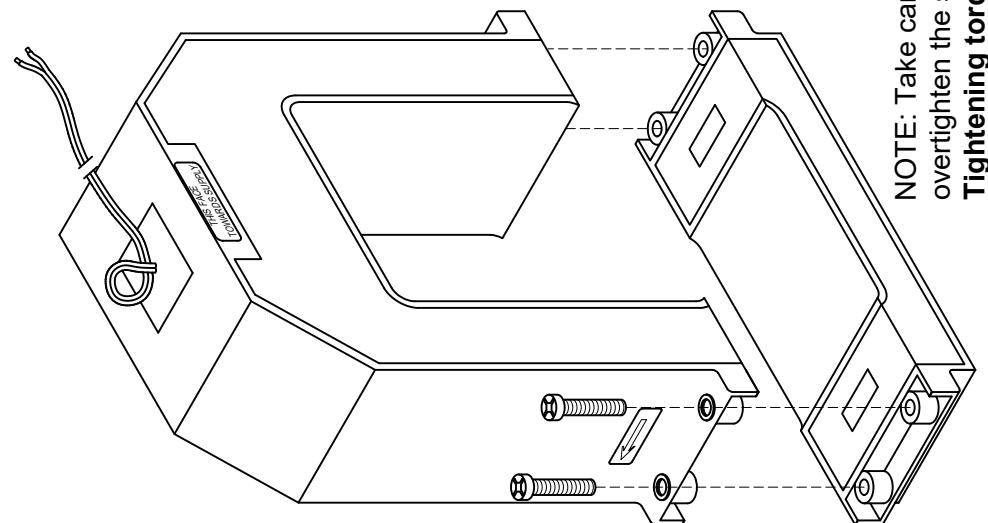
## **SPLIT ARTS INSTALLATION GUIDELINES (PM2163)**

---

# Split ARTS

Circle appropriate letter to match phase being monitored

**2000 & 2500**  
**Amp SART**



NOTE: Take care not to overtighten the screws.  
**Tightening torque:**  
1.1 lb.ft (1.5Nm)

For connection details see Sheet 2

This face towards "supply"

Cable tie

Power cable

**Supply**

This face towards "supply"

Cable tie

Power cable

**Supply**

This face towards "supply"

Cable tie

Power cable

**Supply**

This face towards "supply"

Cable tie

Power cable

**Supply**

This face towards "supply"

Cable tie

Power cable

**Supply**

This face towards "supply"

Cable tie

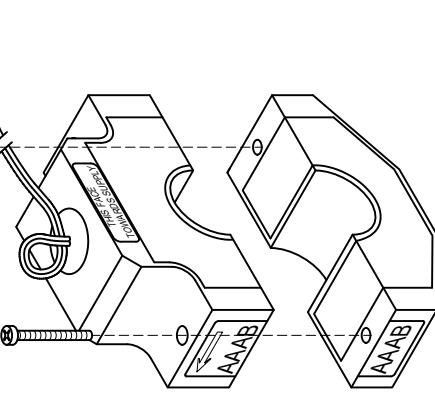
**Model : SART-7500/150  
Voltage : Max 500V 50/60Hz  
Overvoltage Rating Category III  
Serial No : S3-0059  
PARASENSE ENERGY MONITORING CT ENTR120**

Circle appropriate letter to match phase being monitored

**300, 600 & 1200**  
**Amp SART**

NOTE: Take care not to overtighten the screws.  
**Tightening torque:**  
0.6 lb.ft (0.8Nm)

NOTE: Take care not to overtighten the screws.  
**Tightening torque:**  
0.6 lb.ft (0.8Nm)



## Generic Cable Tie Detail

- SART INSTALLATION AND POSITIONING NOTES:
- 1) "WARNING" To reduce the risk of electric shock, always open or disconnect circuit from power distribution system (or service) of building before installing or servicing the SARTs
  - 2) Position and secure SARTs as shown. **The cable should be as close to the top of the SART as possible to ensure maximum accuracy.**
  - 3) The SARTs may not be installed in equipment where they exceed 75% of the wiring space of any cross-sectional area within the equipment
  - 4) Restrict installation of the SARTs in an area where it would block ventilation openings
  - 5) Restrict installation of SARTs in area of breaker arc venting
  - 6) SARTS not suitable for Class 2 wiring methods
  - 7) Not intended for connection to Class 2 equipment
  - 8) Secure SARTs and route conductors so that they do not directly contact live terminals or bus bars
  - 10) Ensure SARTs are installed where the environmental conditions are between 32°F to 110°F (0°C to 43°C) and 0 to 95% relative humidity, non-condensing

NOTE: Ensure power cable is positioned near to the top of the SART as shown.

- SART INSTALLATION AND POSITIONING NOTES:
- 1) "WARNING" To reduce the risk of electric shock, always open or disconnect circuit from power distribution system (or service) of building before installing or servicing the SARTs
  - 2) Position and secure SARTs as shown. **The cable should be as close to the top of the SART as possible to ensure maximum accuracy.**
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  - 10) Ensure SARTs are installed where the environmental conditions are between 32°F to 110°F (0°C to 43°C) and 0 to 95% relative humidity, non-condensing

NOTE: Ensure power cable is positioned near to the top of the SART as shown.

checked:			
9. Drawing border updated. JW 22nd March 2018			
JB			
10. 300,600, 1200A torque settings changed. JW 23rd April 2018			
JB			
11. Border updated. Revised sheet 1 pictorially, shrt 3 was shrt 2, added shrt 2. JH 20th Nov 2018			
PJ			

**PM2163**

revision: **11**

sheet: **1 of 3**

title: **Split ARTs Installation Guidelines**

revision: **9**

part number: **PM2163**

date: **1st Sept 2014**

drawn: **James Wilkinson**

doc ref: **H105-5 10/05/2018**

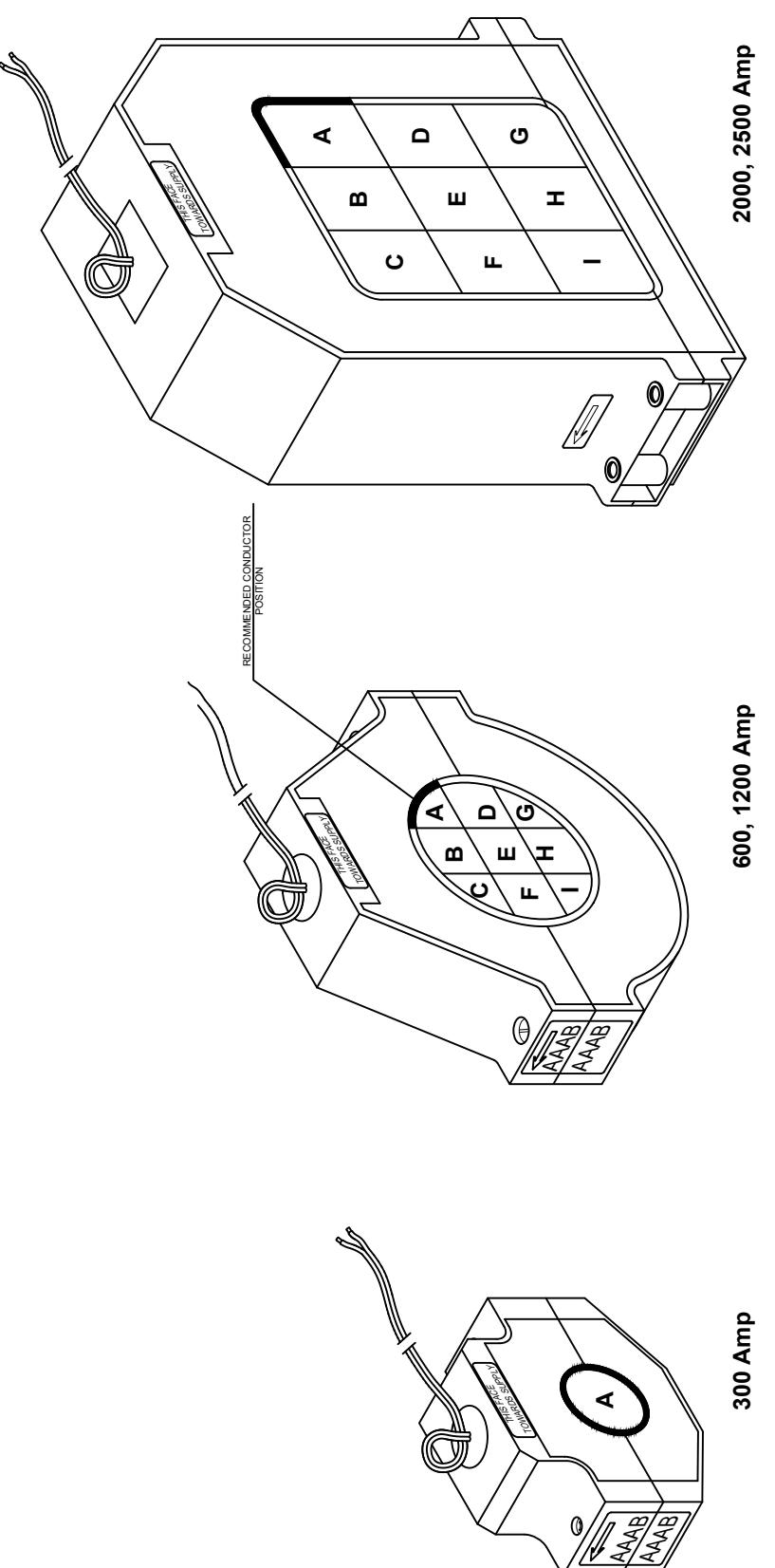
checked: **Parasense**

company: **A BACHARACH COMPANY**

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doc ref: **H105-5 10/05/2018**

# Split ARTS



ZONE	A	B	C	D	E	F	G	H	I
SART SIZE(AMPS)	300	600	1200	2000	2500				
300	+0.0 -0.0	+0.0 -0.0	+0.0 -0.0	+0.0 -0.0	+0.0 -0.0	+0.0 -0.0	+0.0 -0.0	+0.0 -0.0	+0.0 -0.0
600	+0.0 -0.0	+1.4 -0.0	+1.3 -0.1	+0.3 -0.0	+0.3 -0.0	+0.3 -0.0	+0.1 -0.8	+0.1 -1.4	+0.8 -0.3
1200	+0.0 -0.0	+0.8 -0.0	+0.9 -0.5	+0.0 -0.3	+0.6 -0.2	+0.4 -0.6	+0.5 -0.1	+1.0 -0.0	+0.8 -0.2
2000	+0.0 -0.0	+0.0 -1.9	+1.2 -0.2	+0.0 -5.8	+0.0 -6.0	+0.0 -9.1	+0.0 -14.5	+0.0 -14.1	+0.0 -15.5
2500	+0.0 -0.0	+0.7 -0.0	+0.2 -0.7	+0.0 -8.7	+0.0 -11.3	+0.0 -13.1	+0.0 -19.1	+0.0 -20.0	+0.0 -21.5

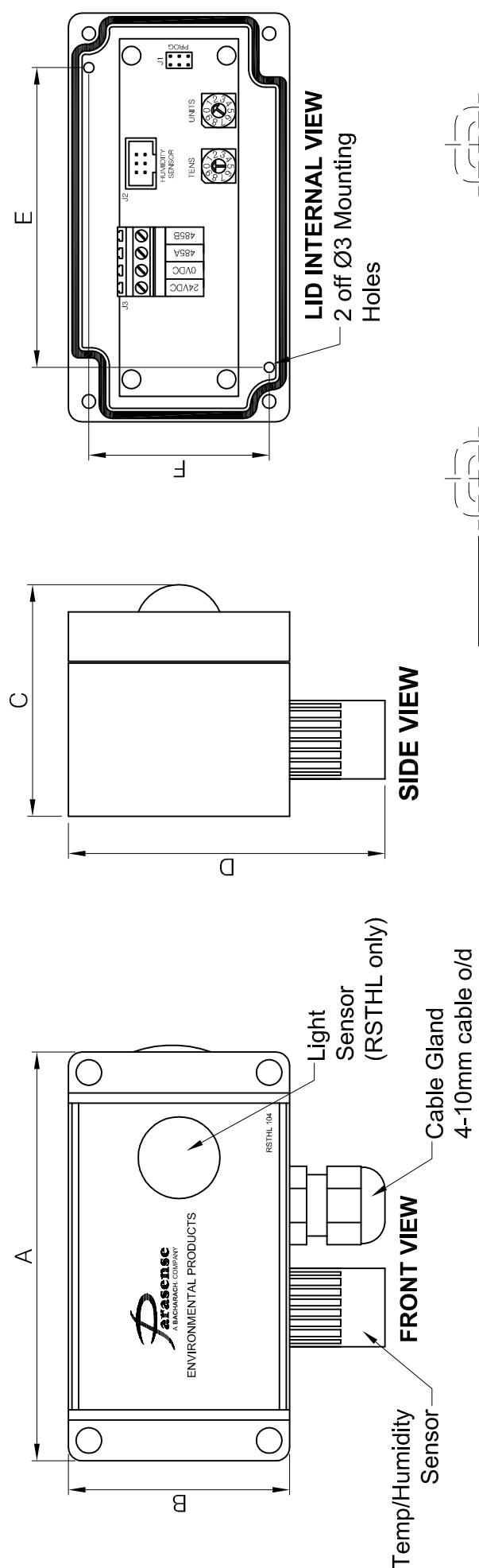
## TYPICAL ADDITIONAL ERROR BASED ON CONDUCTOR POSITION

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				revision: 9. Drawing border updated. JW 22nd March 2018	
				JB	
				JB	
				revision: 10. 300,600,1200A torque settings changed. JW 23rd April 2018	
				PJ	
				11. Border updated. Revised sheet 1 pictorially, sht 3 was sht 2, added sht 2. JH 20th Nov 2018	
drawn: James Wilkinson date: 1st Sept 2014		part number: .....	revision: <b>11</b>	sheet: <b>2 of 3</b>	
Doc. Ref: H105-5 10/05/18					



## **RSTHL-104 PANEL MOUNTING DETAILS (PM1791)**

---

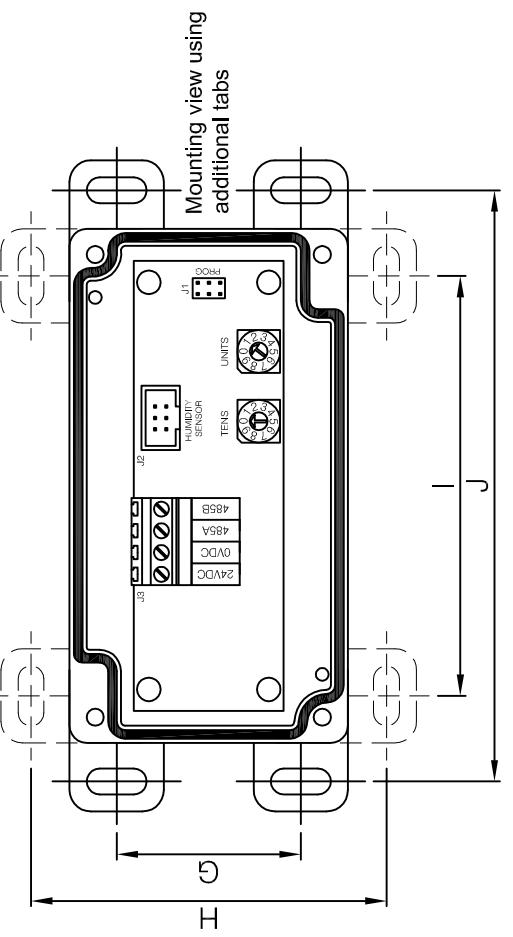


## DIMENSIONS

MODEL - RSTHL(L)	A	B	C	D	E	F	G	H	I	J	WEIGHT
Metric (mm)	120	65	68	93	88	53	43	83	98	138	200g
Imperial (inches)	4.7	2.6	2.7	3.7	3.5	2.1	1.7	3.3	3.9	5.5	0.5lb

## MOUNTING INSTRUCTIONS

- The RSTHL is housed in an IP65 / NEMA 4X rated enclosure. It must be mounted to a solid vertical surface or structure capable of supporting the stated weight. It must be positioned where the enclosure lid can be fully opened, and in a location that facilitates easy service and maintenance.
- The enclosure is mounted using screws and mounting holes as shown in the 'Internal View' above. Alternatively, the enclosure is provided with additional mounting tabs that can be used, as shown to the right.
- Ensure the enclosure is mounted where the environmental conditions are within; Temperature: -30°C/22°F to +55°C/+131°F. Humidity: 0% to 100%, Non-condensing.

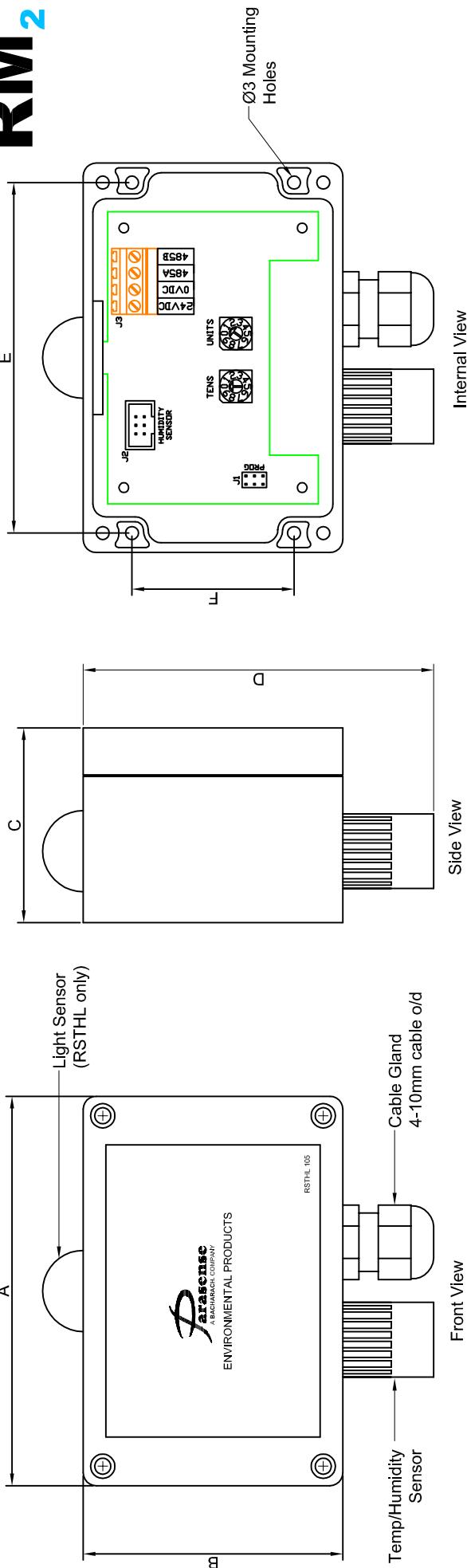


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			revision:	5. Drawing border updated. JW 1st November 2016	AK
			revision:	6. Drawing border updated. JW 16th January 2017	AK
			revision:	7. Drawing border updated. JW 22nd March 2018	JB

## **RSTHL-105 PANEL MOUNTING DETAILS (PM1898)**

---

# RM 2



## DIMENSIONS

MODEL - RSTHL(L)	A	B	C	D	E	F	G	H	I	J	WEIGHT
Metric (mm)	120	80	60	108	50	58	98	98	138	200g	
Imperial (inches)	4.7	3.2	2.4	4.3	2	2.3	3.9	3.9	5.4	0.5lb	

## IMPORTANT LOCATION INSTRUCTIONS

In order to avoid inaccurate temperature and humidity readings it is essential that the RSTHL external sensors are installed in a location that is:

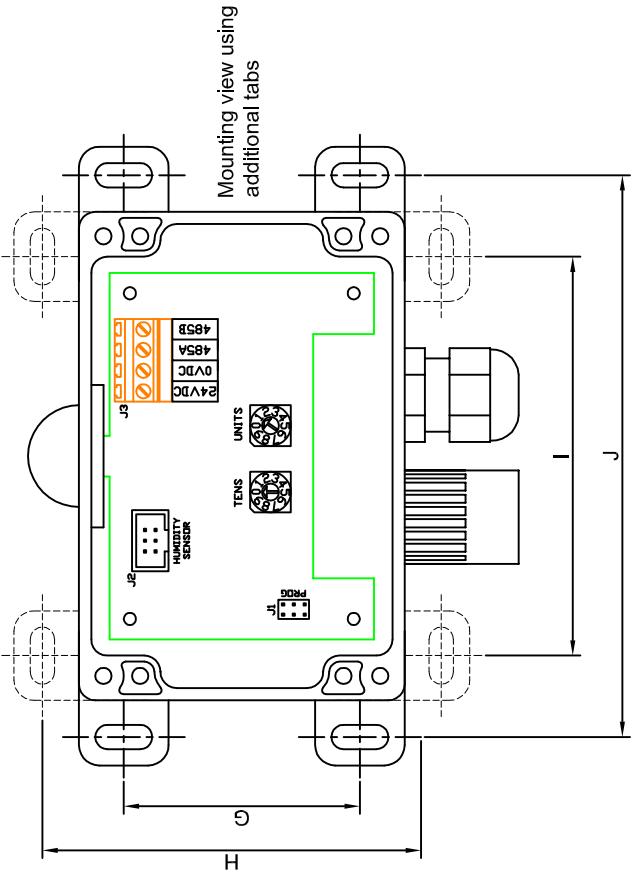
- Shaded from the sun all day, preferably on a north-facing wall
- Well ventilated to avoid heat build up
- Away from potential heat sources such as condensers, ventilation ducts, AHUs etc.
- Away from reflective surfaces
- At least 2m (6ft) above the surface

## GENERAL MOUNTING INSTRUCTIONS

1. The RSTHL is housed in an IP65 / NEMA 4X rated enclosure. It must be mounted to a solid vertical surface or structure capable of supporting the stated weight. It must be positioned where the enclosure lid can be fully opened, and in a location that facilitates easy service and maintenance.

2. The enclosure is mounted using screws and mounting holes as shown in the 'Internal View' above. Alternatively, the enclosure is provided with additional mounting tabs that can be used, as shown to the right.

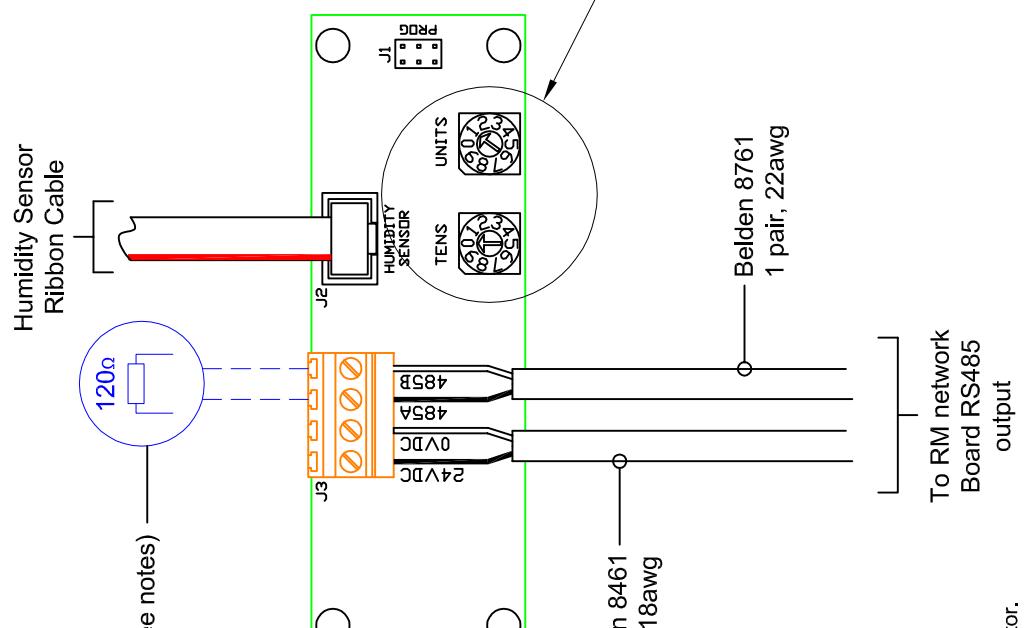
3. Ensure the enclosure is mounted where the environmental conditions are within; Temperature: -30°C-22°F to +15°C/+131°F. Humidity: 0% to 100%, Non-condensing.



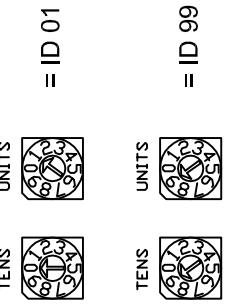
checked:	AK
revision:	5. Drawing border updated. JW 1st November 2016
sheet:	1 of 1
revision:	6. Drawing border updated. JW 16th January 2017
sheet:	7. Drawing border updated. JW 22nd March 2018
title:	<b>PM1898</b>
drawing number:	RSTHL-105 External Environmental Sensor Mounting Details
part number:	RSTHL-105
drawn:	Scott Brindley
date:	25th Aug 2011
doc ref:	PARASENSE and must not be copied or reproduced without their written permission

## **RSTHL-104 CONNECTION DETAILS (PS0639)**

---



Network Addressing Example



Note

Address 00 reserved  
Maximum number of addresses limited by application - Contact Parasense if unsure.

To RM network Board RS485 output

**Note:-**

- 1: Each device to have unique address on RS485 network
- 2: Last device on network to be terminated with 0.25W 120Ω metal film resistor.
- 3: RS485 Cable spec dependent on length.

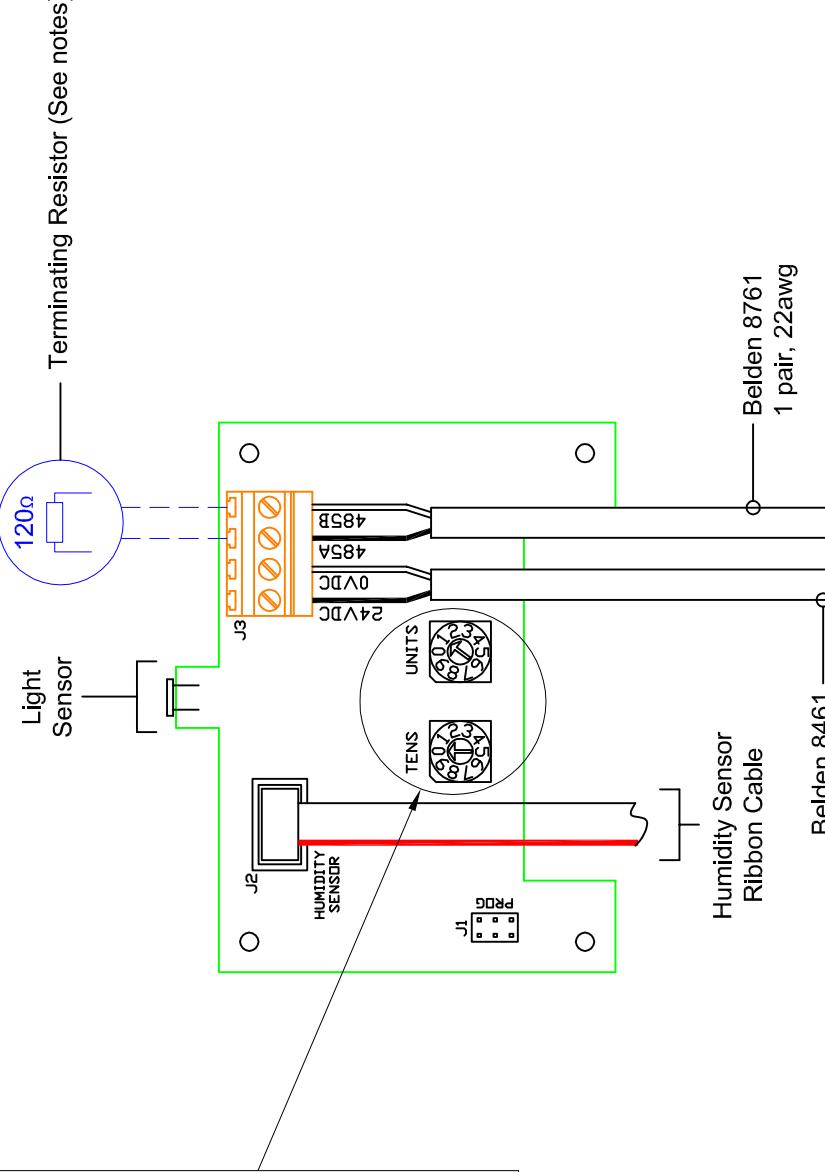
**Up to 990m (3250ft)**  
Signal - Belden 8761 - 1 Twisted Pair, 22AWG  
Power - Belden 8461 - 1 Twisted Pair, 18AWG

		revision:	PS0639	drawing number:	7. Drawing border updated. JW 1st November 2016	checked:
		revision:	8. Drawing border updated. JW 16th January 2017	sheet:	9	AK
		revision:	9. Drawing border updated. JW 22nd March 2018	sheet:	1 of 1	JB
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Doc. Ref: H1054-09/03/18						

## **RSTHL-105 CONNECTION DETAILS (PS0693)**

---

## Network Addressing Example



## Note:-

- 1: Each device to have unique address on RS485 network
- 2: Last device on network to be terminated with 0.25W 120Ω metal film resistor.
- 3: RS485 Cable spec dependent on length:-

### Up to 990m (3250ft)

Signal - Belden 8761 - 1 Twisted Pair, 22AWG  
Power - Belden 8461 - 1 Twisted Pair, 18AWG

checked:	AK
revision:	7. Drawing border updated. JW 1st November 2016
revision:	8. Drawing border updated. JW 16th January 2017
revision:	9. Drawing border updated. JW 22nd March 2018
drawing number:	<b>PS0693</b>
sheet:	<b>1 of 1</b>
title:	RSTHL-105 Connection Details

**Parasense Limited**

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Email: salesuk@parasense.com  
Web: [www.parasense.com](http://www.parasense.com)

**Parasense, Inc**

Phone: +1 (540) 948 9919  
Email: sales@parasense.com  
Web: [www.parasense.com](http://www.parasense.com)