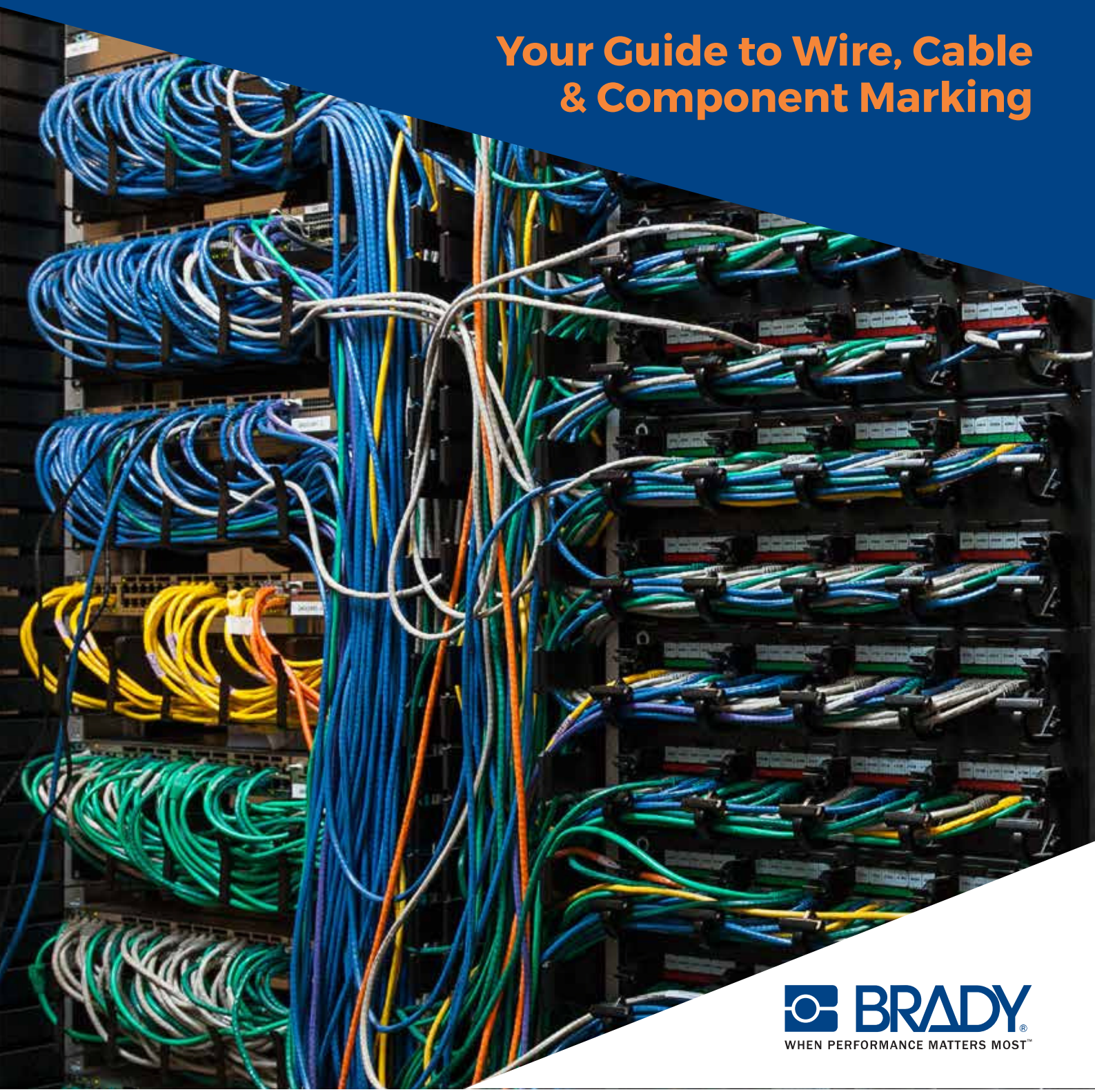
GET REAL VALUE from the RIGHT LABELS

Your Guide to Wire, Cable & Component Marking



BRADY®
WHEN PERFORMANCE MATTERS MOST™

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You have almost completed an electrical install, and the job calls for wire labelling to be updated before you can commission the project. This guide will walk you through the benefits of labelling, how you can get there with the right labels and signs, the importance of an effective labelling system, and how you can save money whilst complying with specifications of the project.

CHAPTER

1 THE BENEFITS OF LABELLING

In the electrical, telecom and datacom industry, hundreds to thousands of cables, wires and electrical components are managed on a daily basis. With a smart labelling system, you can save up to 10% of your operation costs in 1 year!

Get to Know the Standard!

AS/NZS 3000:2007

AS/NZS 3000:2007 is an Australian/New Zealand standard that provides uniform wiring rules and guidelines for the electrical industry. The Standard, sets out requirements for the design, construction and verification of electrical installations, including the selection and installation of electrical equipment.

These requirements are intended to protect persons, and property from electric shock, fire and physical injury hazards that may arise from an electrical installation.

Here's how labelling benefits you...

1. Increased Productivity

When your first priority is to keep the business up and running, you simply don't have the time to search for the cable or wire you need.

Consistent and reliable labels allow you to:

- Immediately recognise what needs to be checked when troubleshooting
- Clearly mark parts in need of maintenance upgrades
- Trace history, lifespan and supplier information
- Add safety warnings and precautions

That means you can keep downtime to a minimum and operations running smoothly by being able to track cables, wires and components at-a-glance. You'll be amazed at just how much more productive you can be when effective labelling is there to make your tasks as efficient as ever.

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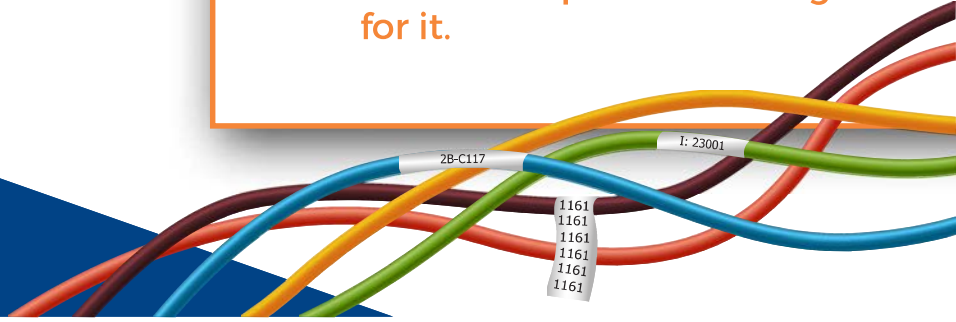
ONLY 25%

of a tech's service time is spent fixing the problem, the rest is spent searching for it.



2. Improved Profitability

Whether you are installing or reworking of wires, cables, components and equipment, how well you label makes all the difference. With the right planning and right labelling, you make the job easier and more efficient for your workers, more professional-looking for your customers, and in turn, more profitable for your operations.

3. Enhanced Organisation & Ease-of-Use

The key to successful identification is using a consistent labelling system. Here's why:

1. **Get Organised.** Having an consistent labelling system allows you to know exactly how you should label and track your wires, cables and components. By having your data in one location, and simply transferring this information to your labelling software and system, will save you time and money.
2. **Improve Consistency & Ease-of-Use.** Having an consistent labelling system means everyone involved knows how to label the same way across one or multiple facilities. It makes your network easier to follow for current – and future – team members.

4. More Reliable, Readable & Durable Labels

When you can rely on your labels to stay in place, stay readable and provide the information you need through colour coding and consistent messaging, you can stay focused on the more essential aspects of your job. Having a labelling system you can trust quickly improves the effectiveness of your daily tasks.

When it comes to wire, cable and component labelling, your labels can offer:

- to reduce mistakes and improve efficiency
- a solution when you have too much information to fit on a label, or need additional traceability
- to stay put over time, when faced with extreme conditions and to not impact on the operations of the cable.

CHECK OUT CHAPTER 2
for more on durable label characteristics!

5. Heightened Safety & Security

Labelling is more than efficiency, convenience and clarity; it can be used to keep your workplace safer, more secure and more compliant. You should consider where else labelling can be used in the workplace to provided added safety, such as Arc Flash labelling.

Regulation supporting electrical safety:

AS/NZS 4836:2011: Safe working on or near low-voltage electrical installations and equipment

This Standard outlines principles and procedures of safe work, organisation and performance on or near low-voltage electrical installations and equipment. It provides a minimum set of procedures, safety requirements and recommendations to manage the hazards associated with electricity, specifically arc blast, arc flash, electric shock and electrocution.

Signs & Labels Supporting Safety & Security

Beyond wires, cables and components, labels and signs can be used throughout your facility to help improve safety and security.

Here are some workplace visuals to consider:

- Asset & Equipment ID
- Safety Signs
- Lockout Tagout
- Raised Panel Labels (Traffolyte Replacements)
- Arc Flash Labels
- Cable Trays
- Floor Marking
- Emergency Egress

CHECK OUT CHAPTER 4

for more on safety and security identification options, along with wire, cable and other label and sign solutions.

CHAPTER

2 LABEL CONSIDERATIONS

Sizes, materials, styles – when it comes to your identification needs, you can find a solution that fits just right.

Label Material

There's a variety of options when it comes to label material, depending on what your application and environment needs are.

- **Polyolefin labels** and sleeves remain legible in wet environments, and have excellent resistances against chemicals and high temperatures.
- **Vinyl labels** offer excellent oil and dirt resistance, and are ideal for non-flat sub-surfaces. Vinyl labels also offer great UV-resistance and come in 10+ standard colour variations.
- **Nylon labels** offer excellent resistance against chemicals and hot and cold temperature ranges. They are ideal for use on curved surfaces and are very strong and flexible.

Cable Thickness

Depending on the thickness of your wires or cables, you'll need to decide which sleeves or self-laminating labels to use in order to make sure they'll fit. Use these tips:

- Cable sleeves should have at least twice the height of the cable diameter
- Self-laminating labels should be +/- 6.5 times the cable diameter (2r x 2pi)
- Wrap-around labels should have +/- 3.5 times the cable diameter (2r x pi)
- Very thick cables can be identified using straps and a cable bundle tag

AWG Conversion Chart

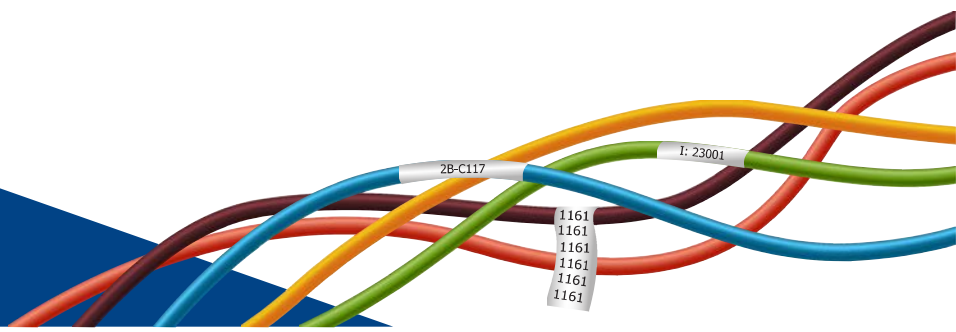
AWG (American Wire Gauge) to mm2 (Millimeters squared) Conversion

AWG to mm² CONVERSION TABLE	
AWG/kcmil	[mm²]*
20	0.52
18	0.82
16	1.31
14	2.08
12	3.31
10	5.26
8	8.36
6	13.3
4	21.2
2	33.6
1	42.4
1/0	53.5
2/0	67.4
3/0	85.0
4/0	107
250	127
300	152
350	177
400	203
450	228
500	253
600	304
750	380
800	405
1000	507

* Equivalent mm2 cross-sectional area

mm² to AWG CONVERSION TABLE		
mm²	[mm²] *	AWG/kcmil
0.	0.52	20
0.75	0.82	18
1.5	1.31	16
2.5	2.08	14
2.5	3.31	12
4	3.31	12
6	5.26	10
10	8.36	8
16	13.3	6
25	21.2	4
35	33.6	2
35	42.4	1
50	53.5	1/0
70	67.4	2/0
95	85.0	3/0
95	107	4/0
120	107	4/0
120	127	250
150	152	300
185	177	350
185	203	400
240	228	450
240	253	500
300	304	600
400	380	750
400	405	800
500	507	1000

Multiple AWG choices — consult responsible engineer for required ampacity



Cable Types

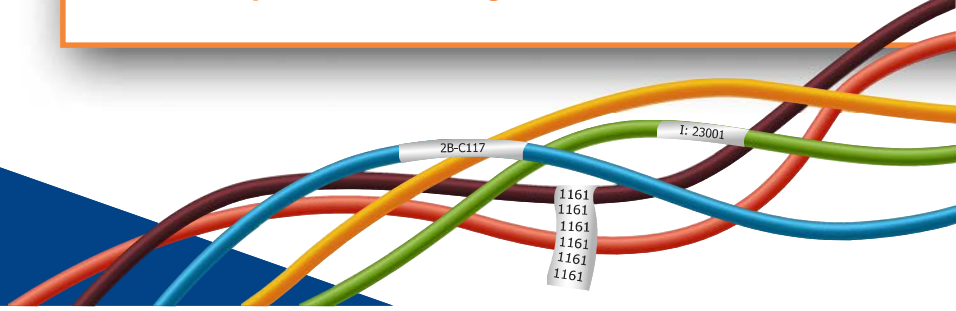
If you want to limit the contact surface between your wire or cable and your identification solution, use a P- or T-shaped flag label. This label type will minimise contact with fiber optic cables for example, while maximising label space to print a code or barcode on.

Terminated Cables

When you need to identify cables or wires that are already attached, sleeves are not an option because they need to be slid over a wire or cable. Tags can be used as a non-adhesive alternative, and self-laminating labels, wraparounds and flag labels are a self-adhesive alternative for terminated cables.

VISIT

bradyid.com.au/wirelabelguide to explore marking solutions.



CHAPTER

3 LABEL DURABILITY

Find the right label materials that stand up to the challenges of your environment.

When considering a labelling system that aligns with your needs, keep in mind the various conditions that your wires, labels and components face on a daily basis. Label materials and adhesives are made differently to stand up to a variety of challenges.

When finding the right quality and type of label, consider these symbols you might need:

Abrasion resistance

Self-extinguishing/ anti-flammability

Fuel/oil resistance

Low-temperature resistance

High-temperature resistance

Solvent/ chemical resistance

Outdoor durability

Ultra-aggressive adhesion

Typical Construction of a Durable Label

The combination of label liner, adhesive, substrate and topcoat provide a label with its features, resistances, capabilities and durability.

1. Topcoat

gives the label its colour and finish, receives the print and increases resistance against weathering, flames, chemicals and heat.

2. Substrate

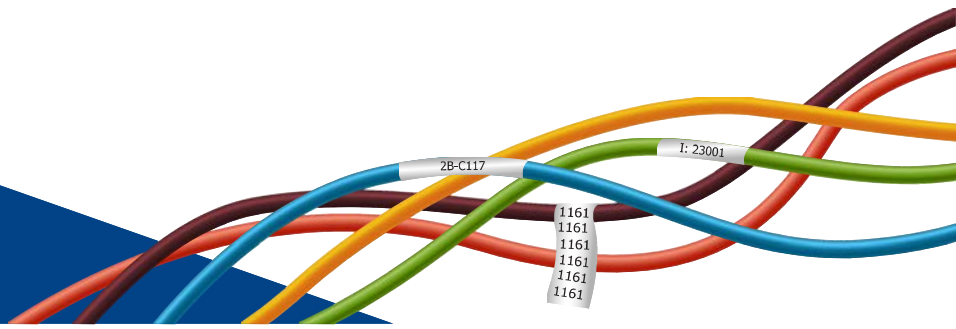
gives the label its form and provides tensile properties, such as strength and flexibility, and physical properties, such as chemical and temperature resistance.

3. Adhesive

attaches the label to a chosen surface type and ensures resistance against environmental conditions.

4. Liner

is a very thin carrier that releases the self-adhesive label.



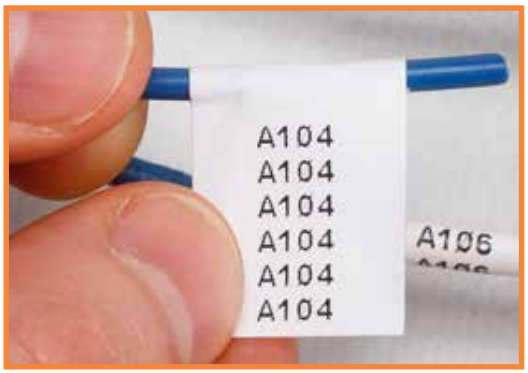
CHAPTER

4 IDENTIFICATION OPTIONS

Explore the cable and wire label options, additional electrical labelling, and safety and security identification solutions for your facility.

Cable & Wire Labelling

Wrap Around Labels



Self-laminating or repositionable wrap around labels are a permanent or temporary solution that provide fade and abrasion resistance. Identifying cables and wires permanently or temporarily, wraparound labels offer both excellent print quality and high resistances versus extreme temperatures, chemicals and fuels.

The **Self-Laminating Vinyl Cable Labels (B-427)** have a durable translucent vinyl film with an acrylic pressure sensitive adhesive. These labels have a white (or other colour options) printable zone and a transparent over-laminate which wraps around the label to protect the text from fading and abrasion.

The **Repositionable Vinyl Cloth (B-498)** Labels feature a specially formulated top coat with a cloth backing. These labels provide very good print quality and excellent holding power, while allowing repositioning of the label for a limited time.

B-427 Self-Laminating Label

B-498 Repositionable Vinyl Cloth Label

Cable Flags

Cable flags are an ideal labelling solution when more information or a barcode is needed to properly identify the wire or cable.

The **Polypropylene Cable Flag (B-425)** is ideal to identify fibre optic cables. The material is very flexible and comes in P- or T-shaped label formats to minimise the contact surface between the label and the fibre optic cable.

The **Nylon Cloth Cable Flag (B-499)** allows for easy folding around wires and can be printed on both sides. This label offers good resistance against heat, cold, oil, dirt and chemicals.

B-425 Polypropylene Cable Flag

B-499 Nylon Cloth Cable Flag

Cable Tags

Cable tags, usually attached with cable ties, offer a lot of space for identification data and provide tear, solvent and heat resistance for indoor or outdoor use. They are ideal for identifying thick cables or cable bundles.

Brady proposes the **Multipurpose Cable Tags (B-109 white) and (B-145 grey)**, which offer extreme resistance to tearing and cold. They are ideal to identify power and ground cables, a/v cables, cable harnesses and data centre wires.

B-109/ B-145 Multipurpose Cable Tags

Sleeves

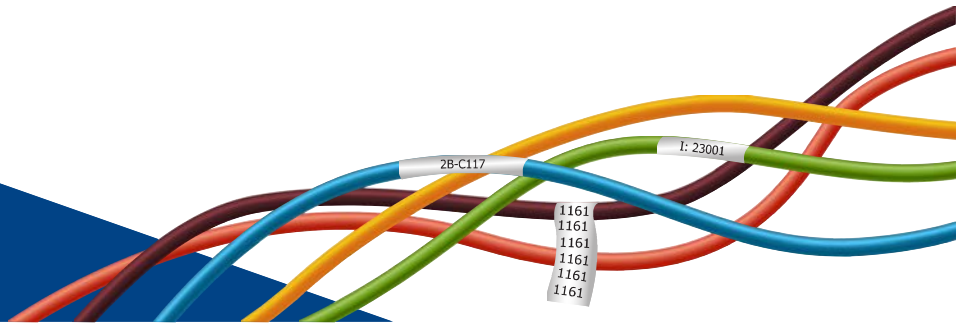
Sleeves are a flexible identification solution that can be moved along a cable until heat shrunk into position. This enables you to adjust sleeve position once cables are terminated. The sleeve needs to be slid over the cable before termination.

The **Heat-Shrink Polyolefin Permasleeve™ (B-342)** available in many colours, has very good temperature and chemical and solvents resistance. Clear, legible text can be printed on the wire and cable sleeve with a Brady printer for reliable wire identification.

The **Low Smoke, Zero Halogen Sleeve (B-7641)** has an excellent UV, humidity, and solvent resistance and excellent flammability. This sleeve can help comply with regulations on smoke and chemical emissions during a fire.

B-7641 Low Smoke, Zero Halogen Sleeve

B-342 Permasleeve

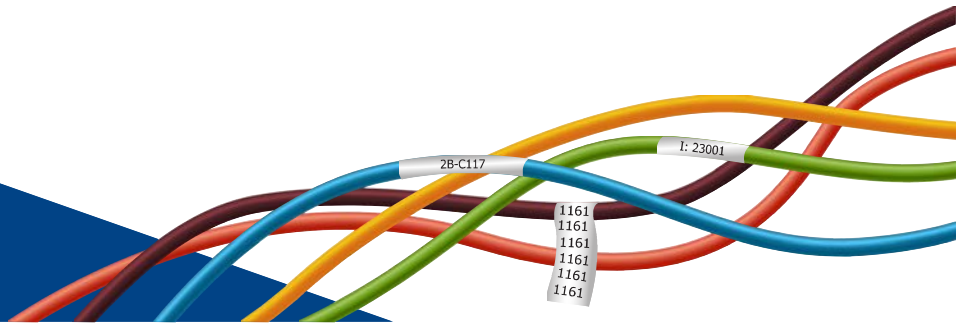


Slide-on Solution

When your cables are not yet attached, and you do not want to use an adhesive label, or a sleeve, a slide-on solution is a great alternative. The slide-on solution's position can be adjusted once cables are terminated

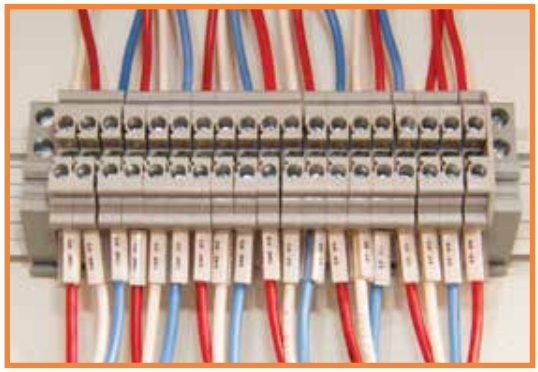
Brady's **Durasleeve™ (B-390),** is available in yellow and white and can be attached to a great variety of wires. Printable Durasleeves are inserted into a transparent, rigid PVC carrier which offers superior strength and protection for your printed inserts. The special shape of the clip-on carrier allows it to adapt to various diameters.

B-390 Durasleeve™



Additional Electrical Labelling

Component Identification

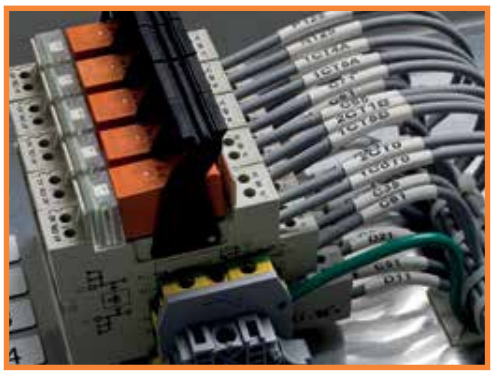


In addition to a great number of wires and cables, electrical, telecom and datacom installations also contain a large number of small and medium sized components whose function or number can be identified for faster maintenance and follow-up operations.

Brady offers a number of specialised labels for components including

- Terminal Blocks & Breaker Boxes
- Raised Panel Labels (Traffolyte Replacements)
- Patch Panels
- DB Outlets

Terminal Blocks & Breaker Boxes



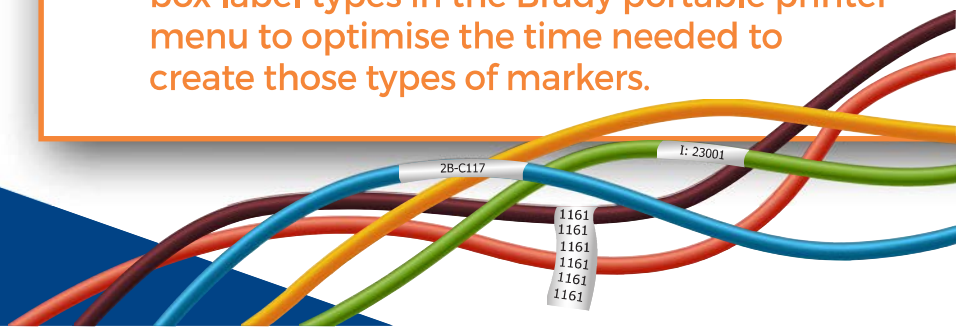
Using pre-printed clips is still very popular for identifying terminal blocks. However, labels that can be applied on the clip or directly on the terminal block are a cost-effective alternative that do not require a large stock of pre-printed clips. You only need to carry a few blank clip sizes and a printer that can print both your component and wire identification labels.

Brady proposes the **Terminal Block Repositionable Labels (B-498)** which offer excellent holding power while easy to remove and reposition at the same time.

B-498 Terminal Block Repositionable Label

TIP:

use the pre-defined terminal block & breaker box label types in the Brady portable printer menu to optimise the time needed to create those types of markers.



Raised Panel Labels (Traffolyte Replacements)

Raised panel labels are used to identify enclosures, push buttons, property and more. With bright colours and clear text, they help employees identify each button at-a-glance so tasks can be performed safely and efficiently.

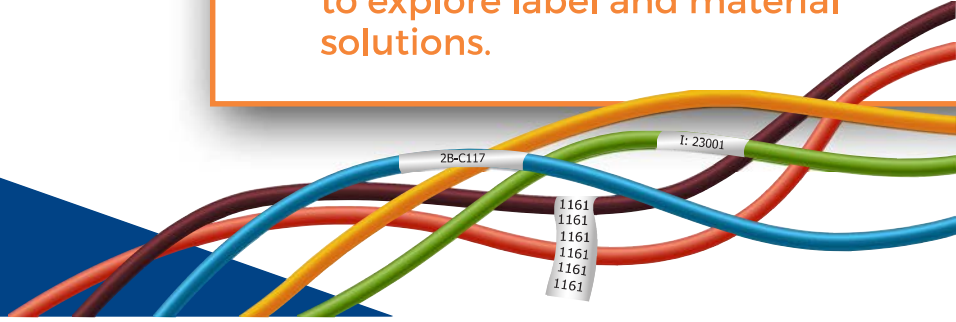
Choosing and buying the right engraved electrical panel plates can be a real hassle and they often require ordering in advance.

The innovative **Raise Panel Label (B-7593 / B-593)** is a polyester label featuring a compressible foam tape and a shiny topcoat. It is specifically designed to replace engraved and plotted plates for electrical component, electrical cabinet, push button and patch panel identification and can be printed on-site. This means you can decide on the spot what your engraved plate alternative should look like.

B-7593 / B-593 Raised Panel Label

GET STARTED!

Visit bradyid.com.au/wirelabelguide to explore label and material solutions.



Patch Panels & Outlets

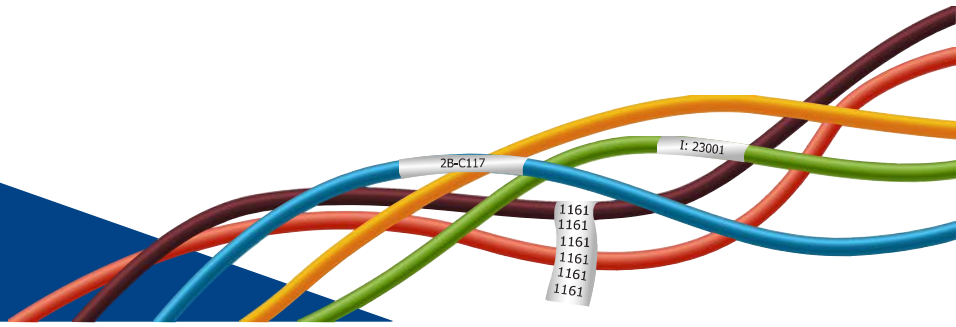
Telecommunication outlets are usually identified manually using a pen, resulting in increasing legibility issues and loss of information over time. A quality printed label can remedy these problems.

The **Polypropylene Tags (B-412)** or the **Polyester Labels (B-422/ B-423/B-430)** are best for identifying patch panels and outlets. Offering high tensile strength, these durable materials exist in a variety of sizes to identify racks, bays, frames, slots and other tele- and datacom equipment. They are designed to be printed and cut to length to slide into patch panel inserts or to be fixed with an adhesive.

B-412 Polypropylene Tag

B-422 Polyester Label

B-423/B-430 Polyester Label



Signs & Labels Supporting Safety & Security

Arc Flash Labels

Did you know up to 80% of all electrical injuries are burns resulting from an arc flash and ignition of flammable clothing?

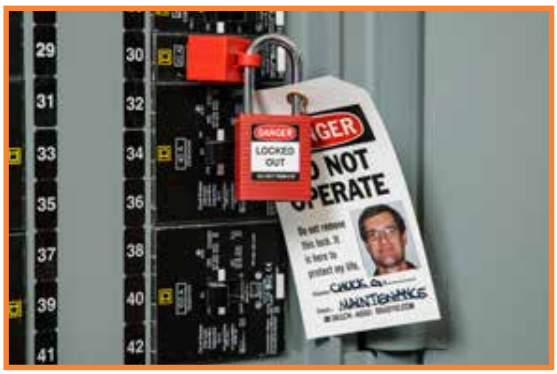
Arc flash labelling includes labelling of electrical equipment, such as switchboards, panel boards, industrial control boards, meter socket enclosures and meter control centers. These labels keep employees safe by providing minimal system voltage, arc flash boundary and personal protective equipment information.

Safety Signs

Beyond wire, cable and electrical labelling, safety signs can be used throughout your facility to clearly tell workers and visitors of hazards at-a-glance. Danger, warning, mandatory, prohibition, emergency and fire signs provide quick, visual cues at the point of need to ensure employees are taking the necessary precautions to stay safe.

Lockout Tagout

When it comes to lockout tagout, effective identification is key to achieving compliance and safety. Along with tags that show that equipment is locked out and provide contact information, electrical disconnect labels should be placed on equipment that is electrically powered to state the location of the disconnect switch or energy isolating point.



Emergency Egress

Help employees and visitors to safely exit the building during an emergency – especially in the event of low light and smokiness – with glow-in-the-dark signs and markings. These can be used to mark egress paths, stairwells, exits, emergency utility shut-offs, fire extinguishers, alarm pulls and more.

Cable Trays

Cable tray identification labels can be used throughout facility to ensure critical information is posted at the point of use. Reduce chance of error by correctly labelling cable trays so all employees can visible see and locate the correct wires.

Floor Marking

Floor marking tape can be used to mark pathways, storage areas, electrical hazard areas and more, keeping workers away from danger and on a safe path in the workplace.

Asset & Equipment ID

Labels can be used throughout your facility to identify equipment, inventory, safety hazards, procedures, safe state and maintenance information, and anything else you can think to label.

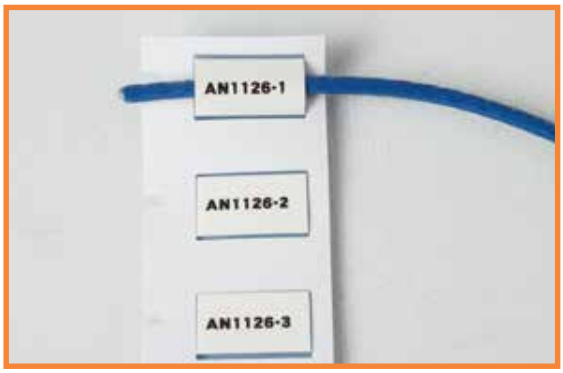
CHAPTER

5 A COMPLETE LABELLING SYSTEM

Going beyond the labels, a complete labelling system provides you with the tools to manage and maintain your wire, cable, component and overall facility identification system.

Pre-Printed vs. Printing System

Once you decide on the labels that would work best on the cables, wires, components and equipment in your facility, the next decision is how to get those labels. You have two options:



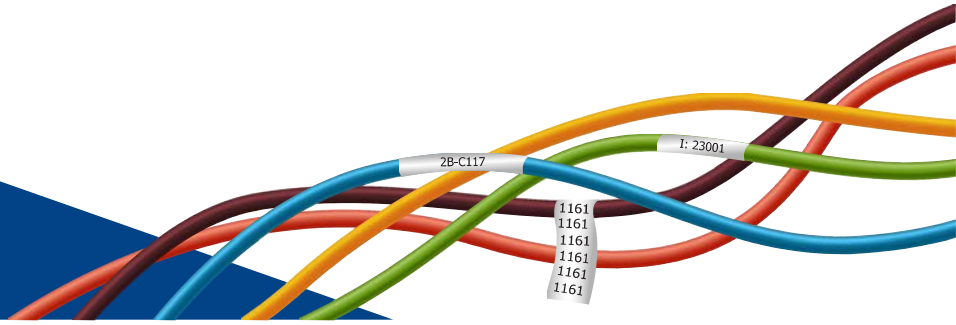
- **Pre-printed labels:**
  Ordering pre-printed labels gives you the opportunity to shop around for the particular label you need, input your information and place an order. This solution is ideal when a low quantity of labels is needed.

- **On-site printing:**
  A quicker solution, on-site printing gives you the flexibility to print the labels you need, right when you need them. That also means you don't have to carry around loads of label sheets that can become disorganised or misplaced.

On-site Label Printing Power

On-site printing power eliminates the need to carry loads of identification labels. Choose the printer that best fulfils your needs (printer comparison table on pg 38), and select a few cartridges of your favourite label materials.

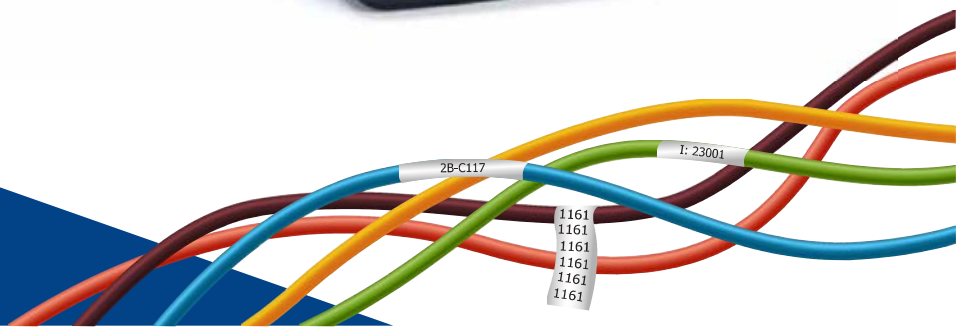
Brady's printing solutions enable on demand printing of the most specialised wire, cable and component labels in Electrical, Telecom and Datacom environments. They will save your preferred label formats for quick and easy reuse and cut your labels to size. Coupled with Brady's label software, they can print the most intricate identification labels conceivable.



BMP™71 Label Printer

The BMP™71 Label Printer is the premium mobile printer. Able to print the widest range of materials, including custom labels, BMP71 features a large and sharp screen, is easily portable and has a built in keyboard. Whether you need heat-shrink sleeves, die-cut labels or indoor/outdoor vinyl, you can be confident that the BMP™71 printer has the right label material for your application.

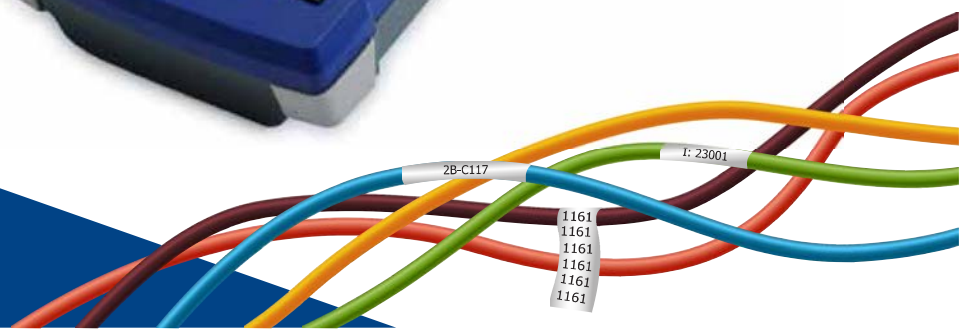
- Over 500 built-in symbols
- Fast typing with both hands
- Enlarged full colour screen
- Qwerty keyboards
- Rechargeable Nimh battery
- Ideal for 1000 continuous or die-cut labels a day
- Label width up to 50 mm
- Supports 400 parts



BMP™51 / BMP™53 Label Maker

The BMP™51 Label Maker helps you get the job done faster, easier and with confidence and offers great media connectivity on top of crisp printing, easy formatting, convenient label sizes and portability. Via WiFi or USB, the BMP™51 Label Maker connects easily to networks, computers, or laptops and also is a standalone printer. The BMP™53 Label Maker has the exact same features, except standalone autonomy, and always works in conjunction with a computer.

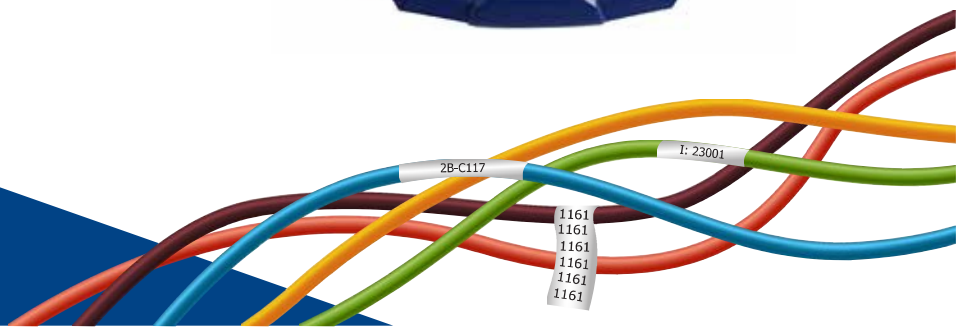
- Wireless capabilities
- High print speed (25.4 mm/sec)
- Durable self-cleaning cutter
- Qwerty keyboard
- 8 AA batteries or rechargeable Lithium-ion battery
- Ideal for 500 continuous or die-cut labels a day
- Label width up to 38 mm
- Supports 190 parts



BMP™41 Label Printer

The BMP™41 Label Printer is the rugged, portable solution that gives you the versatility to create your own label length or use die-cut labels anywhere, anytime! Offering excellent value for money, BMP™41 gets your labelling done easier and faster so you can get on with your day.

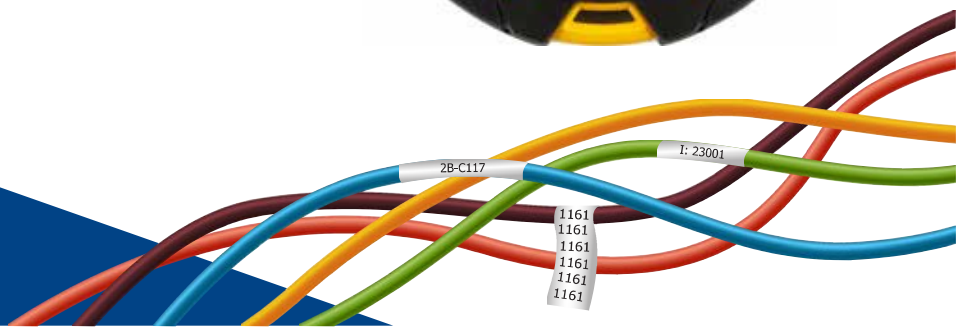
- Drop-tested for industrial usage
- Exceptional material variety and durability
- Prints up to 250 labels a day at 33mm/second
- Large LCD backlit display
- Qwerty keyboard
- Rechargeable Nimh battery
- Ideal for 250 die-cut or continuous labels a day
- Label width up to 25 mm
- Supports 100 parts



BMP™21-PLUS Label Printer

Once you experience the BMP™21-PLUS Label Printer's unstoppable labelling power, you're not going to want to share. It combines a tough exterior with smart printing capabilities for wires, cables and flat surfaces. BMP21-PLUS is an extremely popular printer and Brady's entry-model into DIY Labelling.

- Super rugged with moulded rubber bumpers
- Drop-lock-and-go cartridges
- Easy to use, ergonomic handheld design
- ABC Keyboard
- 6 AA batteries or Lithium-ion battery
- Ideal for 75 continuous labels a day
- Label width up to 19 mm
- Supports 60 parts



Portable Printer Comparison




Printer	BMP™71	BMP™51 & BMP™53	BMP™41	BMP™21-PLUS
Label Feed	Continuous. Die-cut, Bulk rolls, Customs	Continuous, Die-cut	Continuous Die-cut	Continuous
Max. Label Width	50.80mm	38.10mm	25.40mm	19.00mm
Text Sizes	4 to 174pt	4 to 102pt	4 to 72pt	6 to 40pt
Parts Supported	400+	190+	100+	60+
Internal Memory Capacity	100 labels	25 labels	25 labels	12 labels
Built-In Symbols	500+	450	450	104
Barcode Compatibility	Code 39 Code 128 Via software	Code 39 Code 128 Via software	Code 39 Code 128 Via software	Code 39 Code 128
Power Supply	Rechargeable NiMh Battery Or AC power cord	Rechargeable Lithium Ion battery or 8AA's or AC power cord	Rechargeable NiMh Battery Or AC power cord	Rechargeable Lithium Ion battery or 6AA's or AC power cord

Application Printer Comparison




Printer	BMP™71	BMP™51 & BMP™53	BMP™41	BMP™21-PLUS
Sleeve	B-342 B-7641	B-342	B-342	B-342
Self Lam	B-427	B-427	B-427	B-427
Wrap around	B-498 B-499	B-498 B-499	B-498 B-499	B-499
Flag	B-425 B-499	B-425 B-499	B-499	B-499
Tag	B-109 B-145 B-412	B-109 B-145 B-412	B-412	No
Slide On	B-390	No	No	No
Terminal Block	B-498 B-499	B-498 B-499	B-498 B-499	B-499
Engraved Plate Replacement Patch Panel	B-7593 / B-593	No	No	No
Patch Panel	B-412, B-422 B-423, B-428 B-430, B-483 B-488, B-498 B-499	B-412, B-422 B-428, B-483 B-498, B-499	B-412, B-422 B-428, B-483 B-498, B-499	B-423, B-430 B-488, B-499
Custom	Can print custom labels	No	No	No

Benchtop Label Printing

The **BBP™12 Label Printer** prints durable self-laminating labels, wrap around labels, sleeves, cable flags and tags, terminal block, breaker box and patch panel labels. With the compact and reliable BBP™12, you can identify almost every cable and component with a quality label.

The **BBP™33 Label Printer** is an industrial benchtop label printer that is simple, powerful and brilliantly fast. Offering record fast material changeovers and an impressive material lineup, BBP™33 is an ideal printer when you need to change materials fast and frequently.

The **PR Plus Printer** is an industrial, desktop printer capable of handling high output volumes, rapid print speeds, larger width labels and long-lasting print quality. It is ideal for printing on the large range of Brady wire and cable labels such as Durasleeve®, Permsleeve® and EPREP labels.

BBP™12

BBP™33

PR Plus Printer

Label Management Software

When you need to label hundreds and thousands of cables and wires on your network, a label design software can be an extremely useful tool.

From basic label design and printing to advanced import and editing options, Brady's LabelMark software improves the label-making experience.

* Takes the hassle out of constant and tedious labelling jobs
* Has built-in templates, wizards, fixed-text labels and free-form designs to easily create and print custom labels.
* Barcode applications and images for compliance.
* Easy to import large data files and print.

CHAPTER

6 CONCLUSION

Where do you go from your current state?

Well-labelled wires, cables and components give you immediate insight into how an installation works and how it's connected. That way you can perform repairs, installation updates and upgrades in a safer, more secure way, with a reduced risk of human error.

By finding the right label type and material, the right way to acquire labels and a software system when it's needed to manage your network, your job becomes more efficient. Brady offers a variety of durable sign, label and tag materials, reliable printing systems and easy-to-use software solutions to support your labelling system and take your operations to the next level.

Explore labelling solutions at bradyid.com.au/wirelabelguide

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