

Bardac Drives

P² SERIES

Powerful Performance | Advanced Motor Control

1HP – 400HP / 0.75kW – 250kW
200 – 600V Single & 3 Phase Input

IP20

NEMA 4X (IP66)

NEMA 12 (IP55)



P² SERIES

IP20 Key Features

Internal EMC Filter with Disconnect

Integral Keypad and bright TFT display

Designed for control cabinet mounting

Compact mechanical enclosure

Contactor style power wiring connections

Quick Start Help Card

Integrated Brake Transistor

Contactor-Style Power
Wiring Arrangement



Convenient
Reference Card



Keyhole
Mounts
for fast
installation



DIN Rail Mount



Optional comms
& encoder interface



dw224 speedy
Enhanced Function Blocks
Ethernet EIP/PCC
ModbusTCP/IP
USB

Modbus RTU
and CANopen
onboard as
standard

P² SERIES

IP55 Key Features

Keyhole
Mounts
for fast
installation

Integrated
Keypad & Display
(Bright TFT Display)

Select Language
Español
Deutsch
▶ English

Designed for plant / production room installation

Dust and water tight seals

Steel chassis

Keyhole Mounting slots

Bottom cable entry & exit

Removable Gland Plate

Internal Brake Transistor

Internal EMC Filter

Multi Language Plain Text Display



IP55 / NEMA 12

Integrated
EMC Filter



Pluggable Control
Terminals



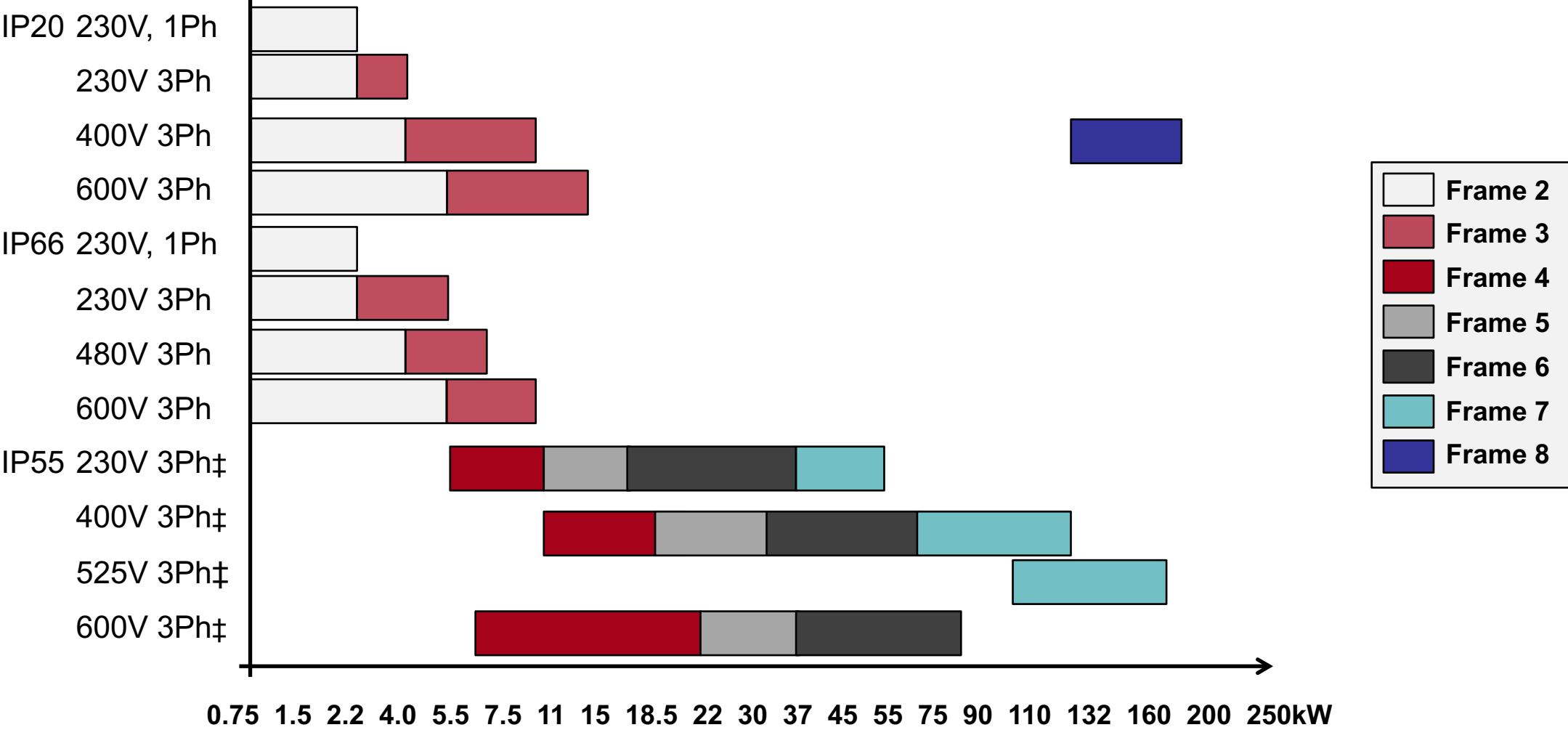
High Quality
Long-life Fans

Integral
Brake
Transistor



Integrated Cable
Management

Power Rating & Frame Size



Drives Market ‡ are available in IP20 enclosures with 50°C rating.
Please call for details, availability & pricing.

Model Code Guide

| | | | | | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|-----|---|---|---|---|---|---|--------------------------------------------------------------------------------------------------------------------------------|
| | P | 2 | - | 2 | 4 | 075 | - | 1 | K | F | 4 | 2 | |
| Product Range E : Economy P : Performance V : HVAC ODL : Elevator | | | | | | | | | | | | | |
| Generation | | | | | | | | | | | | | |
| Frame Size | | | | | | | | | | | | | |
| Supply Voltage 2 : 200 – 240V + / - 10% 4 : 380 – 480V + / - 10% 5 : 480 – 525V + / - 10% 6 : 500 – 600V + / - 10% | | | | | | | | | | | | | |
| Power Rating | | | | | | | | | | | | | |
| Input Phases | | | | | | | | | | | | | |
| Power Type K : kw (50Hz) H : HP (60Hz) | | | | | | | | | | | | | |
| | | | | | | | | | | | | | Enclosure 2 : IP20 4 : IP40 N : IP55 A : IP66 Non Switched B : IP66 Switched E : IP66 With Disconnect |
| | | | | | | | | | | | | | Brake Transistor 1 : No Internal Brake Chopper 4 : Internal Brake Chopper |
| | | | | | | | | | | | | | EMC Filter 0 : No Internal EMC Filter A : 400 Volt EMC Filter B : 230 Volt EMC Filter F : EMC Filter |

Integrated EMC Filters

- All drives have internal EMC filter designed to meet the requirements of EN61800
 - 1 Phase Input Drives > Category C1
 - 3 Phase Input Drives > Category C2 / C3
- External disconnect point on IP20 drives only
- Optional External Panel Mount filters available for 480 Volt 3 Phase C1 & increased motor cable length



Motor Control

Universal Platform for all motor types

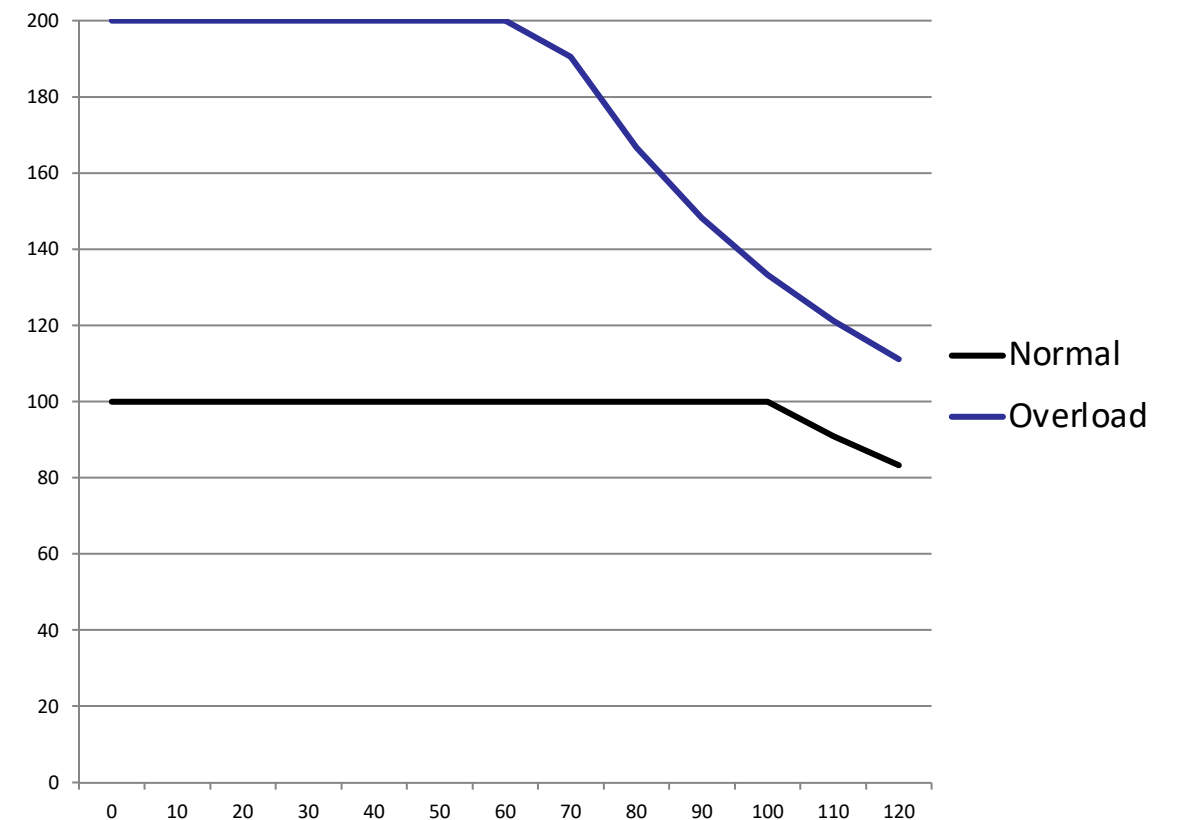
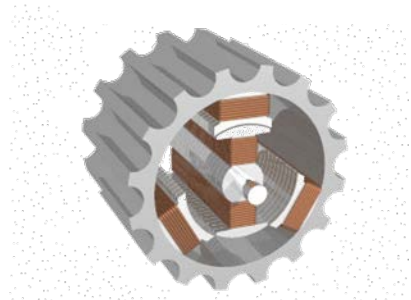
- Standard (IM) Motors
 - V/F Control
 - Sensorless Vector Control
 - Closed Loop Vector Control
- Permanent Magnet (PM) Motors
 - High Efficiency PM Vector Control
- Synchronous Reluctance (SR) Motors
 - Vector Control



P2 and IM Motors

P2 Series IM Motor Control Methods:

- Simple V/F Control
 - Simplest set up for standard applications
- Enhanced V/F Control
 - Improved Starting torque and speed regulation, torque control
- Third Generation Vector Control
 - Speed & Torque Control Modes
 - Maximum possible starting torque
- Closed Loop (Encoder Feedback) control of standard AC induction Motors (requires optional encoder feedback interface option)
 - Speed & Torque Control Modes



Extensive Analog & Digital I/O

- +24V output / +24V input for electronics backup
- +10V output supply for potentiometer
- Dedicated “Safe Torque Off” Input
- 3 Programmable digital inputs (EN 61132-2 compatible)
 - 4ms Sample Time
- 2 Programmable Analog / Digital inputs (bipolar, 0-10V, 4-20mA, 0/24V)
- 2 Programmable Relay outputs
 - 1 changeover
- Optional Extended I/O Modules
 - T2-EXTIO 3 x Digital Input, 1 Relay Output
 - T2-CASCD 3 x Relay Output
- Extensive I/O for easy integration into many systems
- Optional I/O further increases the flexibility



24VDC Power Supply Capability

- 24VDC Power can be connected, either to the drive control terminals
 - +ve : Terminal 1
 - -ve : Terminal 7 or 9
- ...or the RJ45 connector
 - +ve : Pin 6
 - -ve : Pin 3
- All analog and digital I/O functions remain active
- Communication interface remains active



Machine Safety

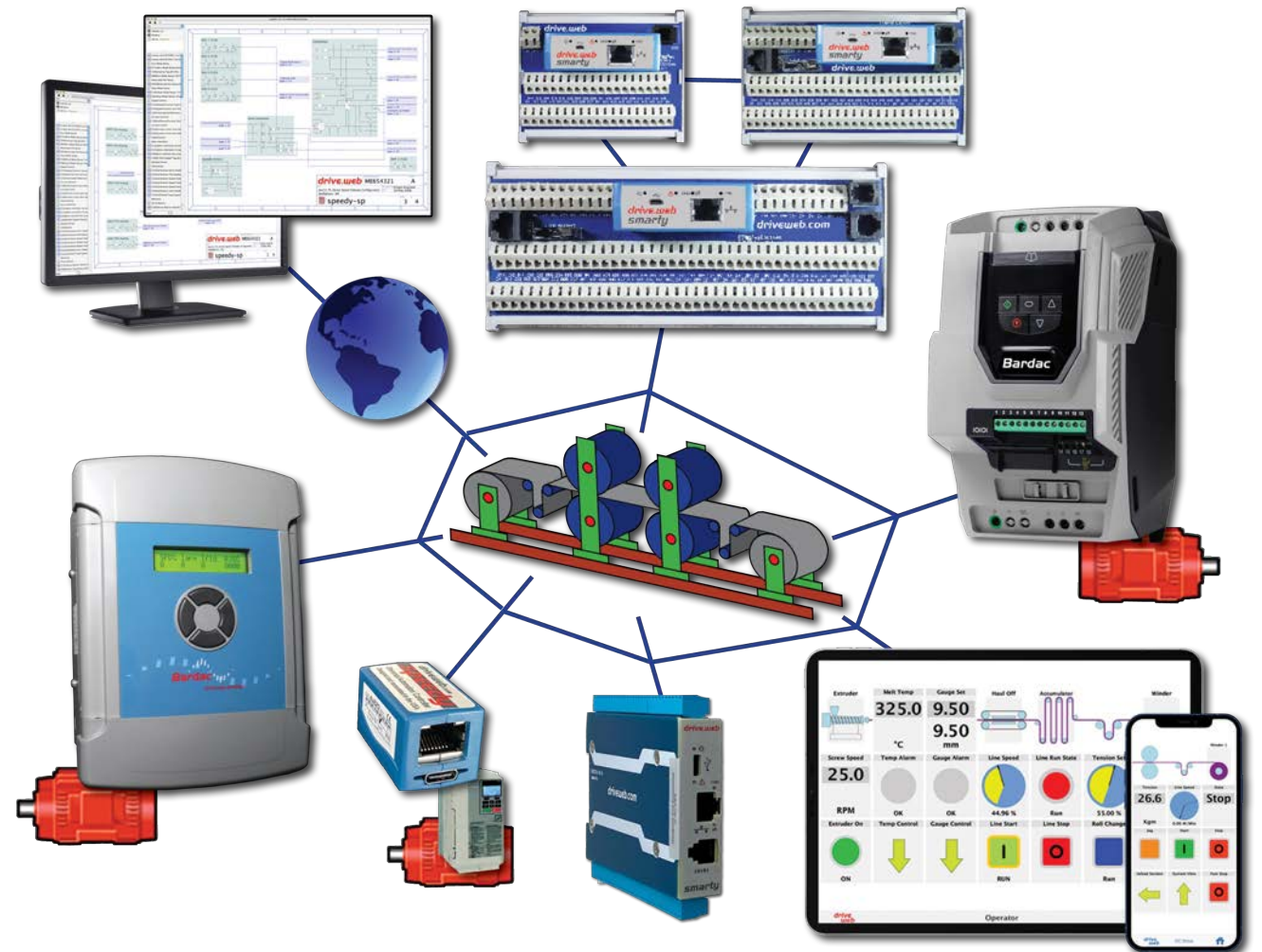
- Safe Torque Off (STO) built in as standard
- Certification by TUV
- P2 Series Safe Torque Off meets
 - IEC 61508 SIL 2
 - IEC 61800-5-2 Type 2
 - IEC 62061 SIL 2
 - ISO 13849 PL "d"
- Allows OEMs & Machine builders to easily meet safety aspects of machinery directive
- Easily integrated into existing safety systems



drive.web automation

drive.web Distributed Control Technology

- System integration without PLC
- Cost effective in systems of any size
- Peer-to-peer Ethernet networking
- Internet accessible
- Graphical function block tools
- Onboard data storage
- Powerful system navigation
- **savvyPanel** touch screens
- WiFi roaming with iPad, iPhone, etc.
- Easy links to most drives, PLCs, etc.
- Supports enterprise integration
- **savvy** intuitive signal flow tools
- Online training and field support

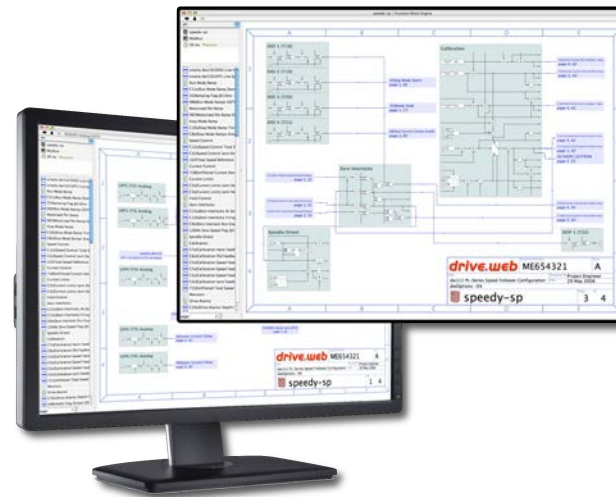


drive.web Products



smarty

- DIN mount controllers with flexible analog, logic & encoder I/O
- 16 points of high resolution I/O



savvy

Smart, intuitive graphical tools for device programming, system design & monitoring



speedy

Miniature drive interface controllers with gateway to ModbusTCP/IP, ModbusRTU, EIP/PCCC, etc.



savvyPanel

Smart, touch screen operator station technology

Advanced Communications

A wide range of Communication Fieldbus Systems are catered for

On Board

- Modbus RTU
- CANopen

With Optional Interface

Profibus DP
T2-PROFB



Profinet IO
T2-PROFN



DeviceNet
T2-DEVN



Advanced Communications

Ethernet IP
T2-ETHNT



Modbus TCP
T2-MODIP

Modbus TCP

EtherCat
T2-ETCAT



- Simple Interface Design enables fast integration into complex systems
- Simple Data format standardised across all Fieldbus systems
- Allows the drive to integrate with a wide range of peripherals and systems.
- All fieldbus systems utilise a common basic data format



Advanced Diagnostics

Intelligent Maintenance and Diagnostics

- Dedicated Read Only Parameters Group speeds up commissioning
 - Many status parameters (e.g. Analog Signal Levels) for checking
- Lifetime & Critical Data Monitoring
 - Drive Run Time Counter
 - Fan Operating Time Counter
 - Extensive Fault Logs
- Intelligent Data Logging
 - Data logger stores important data prior to a trip
 - Helps with fault diagnosis and remedy



Advanced Features for Applications

P² SERIES



Dedicated Hoist Mode

- Dedicated on board 'Hoist' Mode, enabled by single parameter
- Intended for typical crane and hoist applications
- Fast, safe commissioning
- Safe operation
- Open loop vector control gives excellent performance for crane applications



Built-in Master Slave

- Easy Master – Slave Control
- Multiple drives can be easily connected together using RJ45 cables
- Slaves follow Master operation
- Analog & Digital Speed scaling available
- Load sharing also possible using Droop Control
- Suitable for many applications, e.g.
 - Conveyer Speed Matching
 - Inlet / Extract fan air flow balancing
 - Carousel multi drive load sharing
 - And many more...



PID Control

PID Speed Control

- Pump pressure Control
- Temperature Control

PID Torque Control

- Winding tension control



Energy Optimization

Energy Optimizer

- For constant or variable torque applications
- Reduces applied motor voltage in proportion to motor load
- Reduces energy consumption up to 30% on partial load conditions



Accurate Torque Control

3GV Vector Control

- Accurate control of motor speed and torque
- Simple, fast commissioning with only basic parameter settings required
- High Starting torque for applications, e.g.
 - Extruders
 - Hoists
 - Mixers
- Accurate control for applications, e.g.
 - Winding tensions control
 - Vacuum Pumps
 - “Shear Pin” torque limit



Commissioning Software

- **savvy-SFD**
- For E2, P2, HVAC Drives
- Drive Commissioning
- Parameter Upload / Download / Storage / Edit
- Online Monitoring
- Scopemeter Function & Data Logger
- Parameters Changed Display / Comparison
- USB or Bluetooth connectivity



Accessories & Options

*Bardac
drives*

P² SERIES



External Remote Keypad Options

- Optiport – Remote Keypad with Display
- Optipad – Remote Keypad with TFT Display
- Universally compatible with E2, P2, HVAC Drives



2nd Generation Optistick

Rapid Commissioning

- Allows rapid copying of parameters between multiple drives
- Backup and restore of drive parameters

T3-STICK-IN



Extended I/O

P2 : Extended I/O Options

- Extended I/O Module
 - (3 x Digital Inputs, 1 x Relay Output)
- Extended Relay Module
 - (3 x Relay Output)
 - Factory set functions
 - Drive Healthy
 - Drive Fault
 - Drive Running
- Other functions possible via Advanced Parameters



Networking Components

RJ45 Hub

- ✓ Multi Port Serial Network Hub
- ✓ Network Termination Resistors Built in



RJ45 Patch Cables

- ✓ Pin to pin connected
- ✓ 0.5, 1 and 3 metre length



RJ45 Splitter

- ✓ 3 Way RJ45 network cable connector



Mains Disconnect / Isolator

- Available for
 - Frame Size 4
 - Frame Size 5
- Bolts directly to drive
- Includes Isolator



THANK YOU!

*Bardac
drives*

P² SERIES

