



OPTIDRIVE™ CP²

Powerful Performance
Advanced motor control

0.75kW – 250kW / 1HP – 350HP
200 – 600V Single & 3 Phase Input

IP20

IP66

IP55





IP20 Key Features

Internal EMC Filter with Disconnect

Integral Keypad and bright LED display

Backlit Invertek Drives Logo with Trip Indication

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



Keyhole
Mounts for fast
installation



DIN Rail Mount



Convenient
Reference Card

Modbus RTU
and CANopen
on board as
standard



Modbus
CANopen



OPTIDRIVE™ **CP²**

IP55 Key Features



Designed for plant / production room installation

Dust and water tight seals

Steel chassis

Keyhole Mounting slots

Bottom cable entry & exit

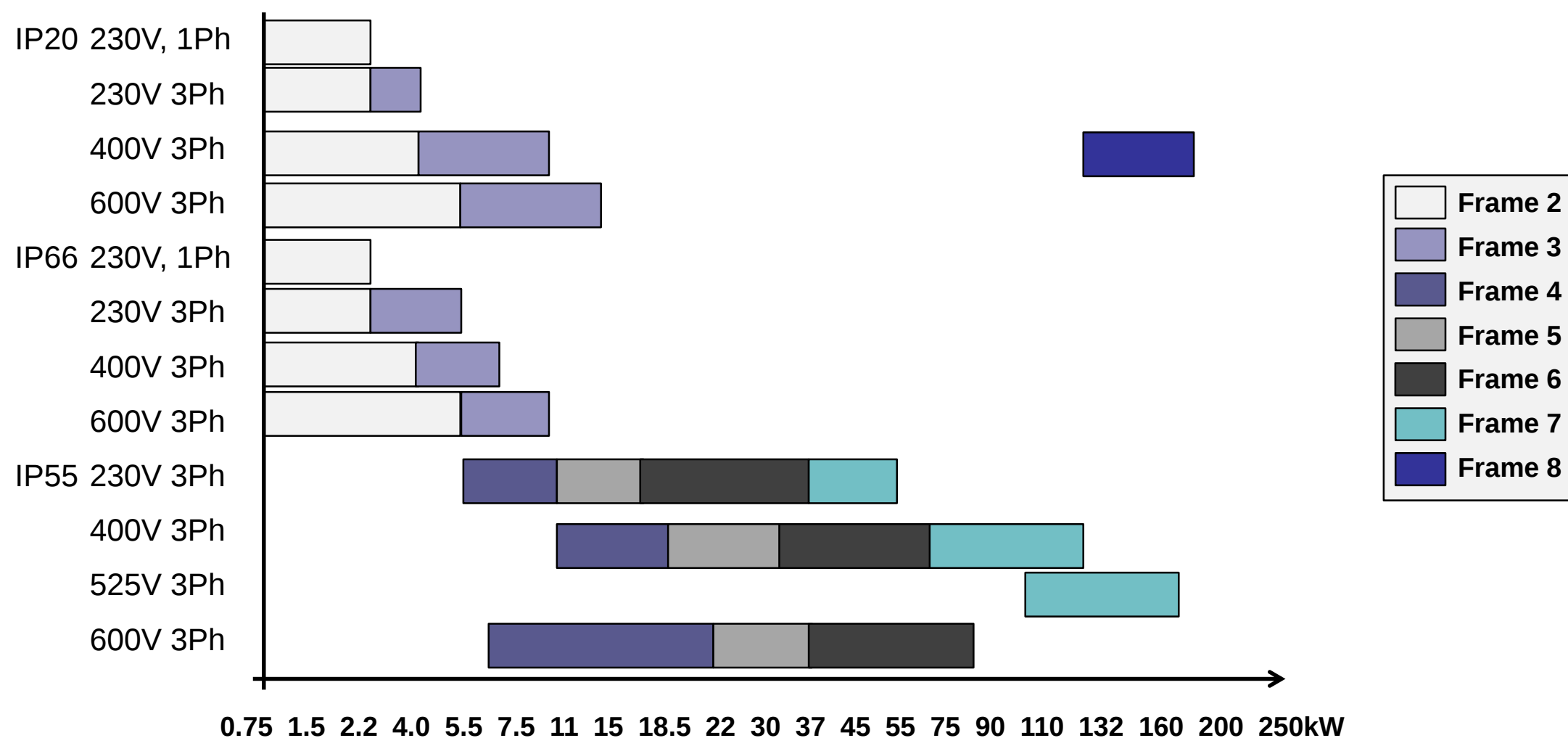
Removable Gland Plate

Internal Brake Transistor

Internal EMC Filter

OLED Multi Language Plain Text Display

Power Rating & Frame Size



Model Code Guide



	ODP	-	2	-	2	4	075	-	1	K	F	4	2	-	S	N	
Product Range ODE : Economy ODP : Performance ODV : HVAC ODL : Elevator																	PCB Protection N : Standard Coating C : Additional Coating
Generation																	Display Type S : LED 7 Segment T : OLED Text Display
Frame Size																	Enclosure 2 : IP20 4 : IP40 N : IP55 X : IP66 Non Switched Y : IP66 Switched D : IP66 With Disconnect
Supply Voltage 2 : 200 – 240V + / - 10% 4 : 380 – 480V + / - 10% 5 : 480 – 525V + / - 10% 6 : 500 – 600V + / - 10%																	Brake Transistor 1 : No Internal Brake Chopper 4 : Internal Brake Chopper
Power Rating																	EMC Filter 0 : No Internal EMC Filter A : 400 Volt EMC Filter B : 230 Volt EMC Filter F : EMC Filter
Input Phases																	
Power Type K : kw (50Hz) H : HP (60Hz)																	

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 400 Volt 3 Phase C1 & increased motor cable length



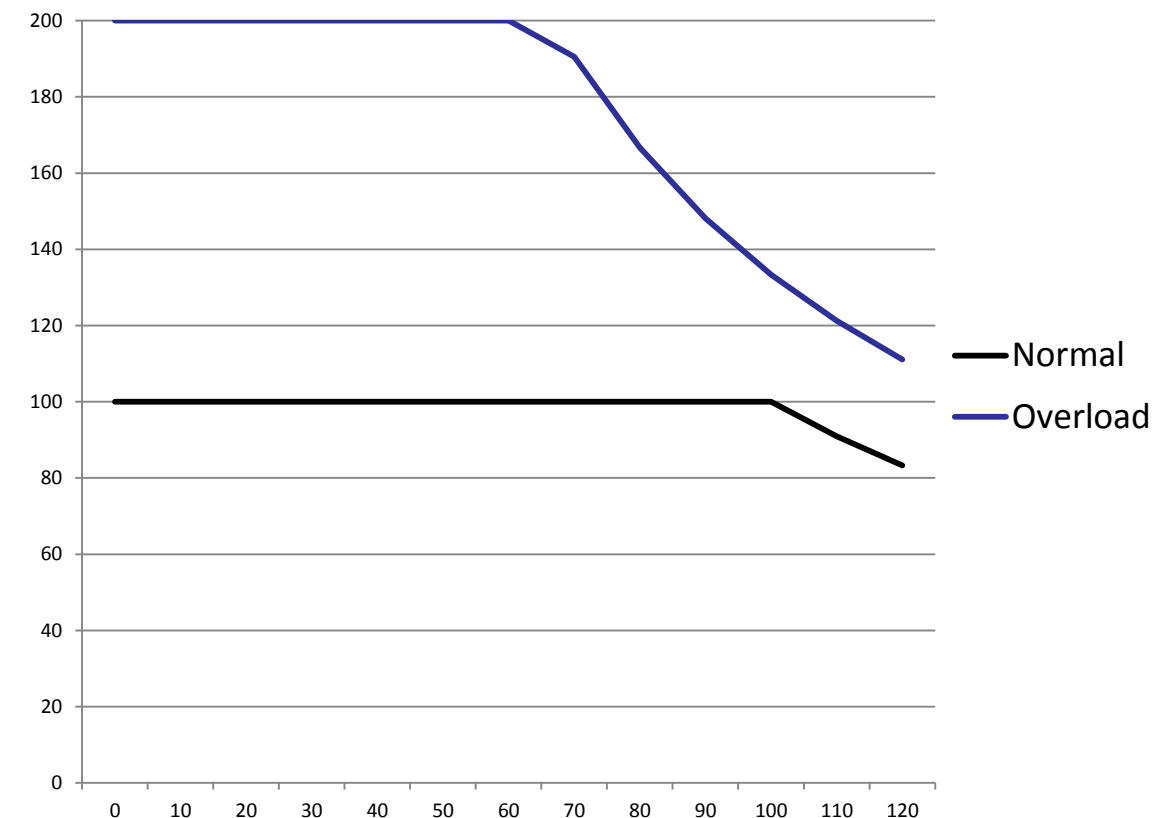
Universal Platform for all motor types

- 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



Optidrive P2 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
 - OPT-2-EXTIO 3 x Digital Input, 1 Relay Output
 - OPT-2-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



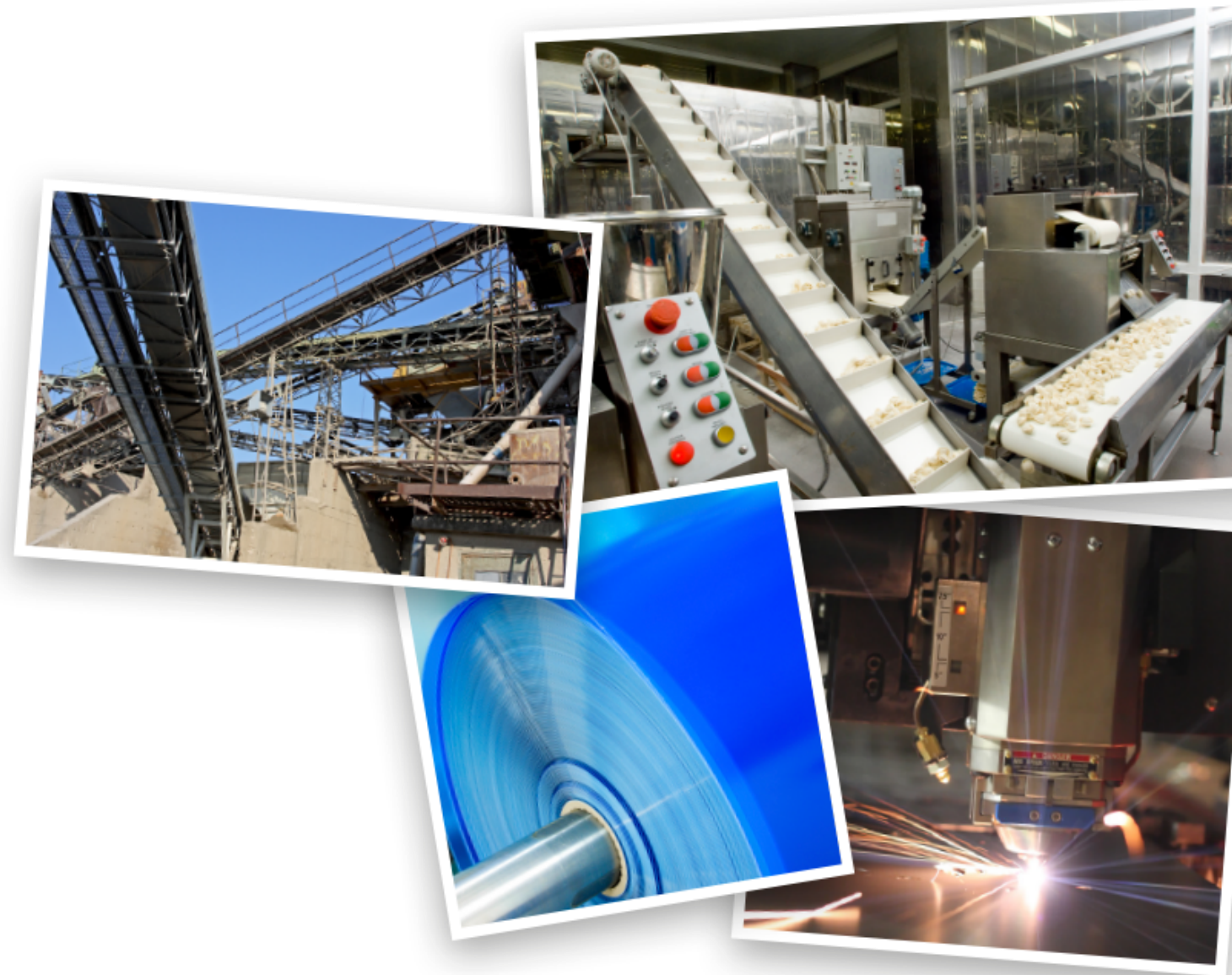
- 24VDC Power can be connected, either to the drive control terminals
 - +ve : Terminal 1
 - -ve : Terminal 7 or 9
- ...or the RJ45 connector
 - +ve : Pin 6
 - -ve : Pin 3
- All analog and digital I/O functions remain active
- Communication interface remains active
- PLC function operates



Machine Safety



- Safe Torque Off (STO) built in as standard
- Certification by TUV
- Optidrive P2 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



Advanced Communications



A wide range of Communication Fieldbus Systems are catered for

On Board

- Modbus RTU
- CAN Open

With Optional Interface

Profibus DP
OPT-2-PROFB



Profinet IO
OPT-2-PROFN



DeviceNet
OPT-2-DEVN



Advanced Communications



Ethernet IP
OPT-2-ETHNT



Modbus TCP
OPT-2-MODIP

Modbus TCP

EtherCat
OPT-2-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



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



P2 dedicated features for OEMs

- Parameter Set Customisation
 - Each Parameter can be individually hidden / visible
 - All Parameters can be locked if required
 - Parameter sets can be copied using the Optistick
 - OEM parameters can be loaded as default (parameter reset = OEM parameters)
- Built In 'Simple PLC' capability
 - Customisation of drive operation
 - PLC files can be protected to prevent unwanted access
 - PLC program can be copied by Optistick
 - OEM & System Integrator can now develop their own 'Application Firmware'
 - Custom programs can be protected if required to prevent copying
- Complete flexibility and easy support for OEMs!



Advanced Features for Applications



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 Optimiser

- 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



PLC Function

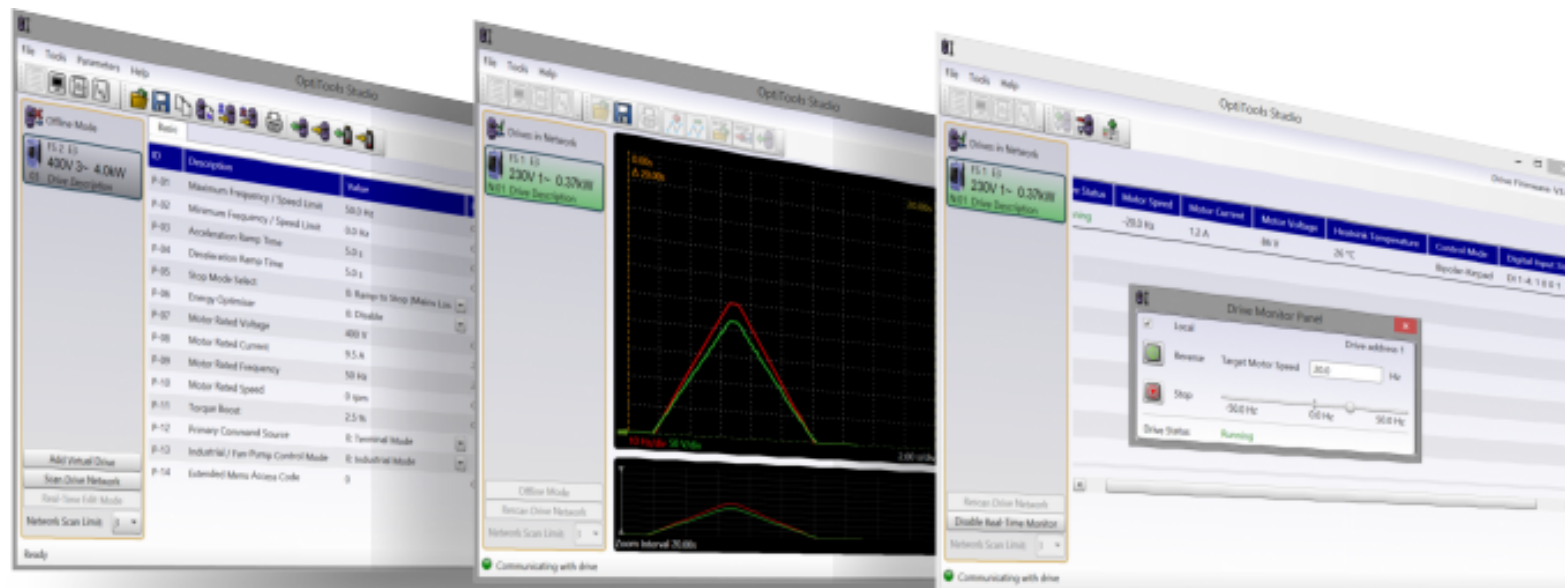


Commissioning Software



Introducing.....

OptiTools Studio



Commissioning Software



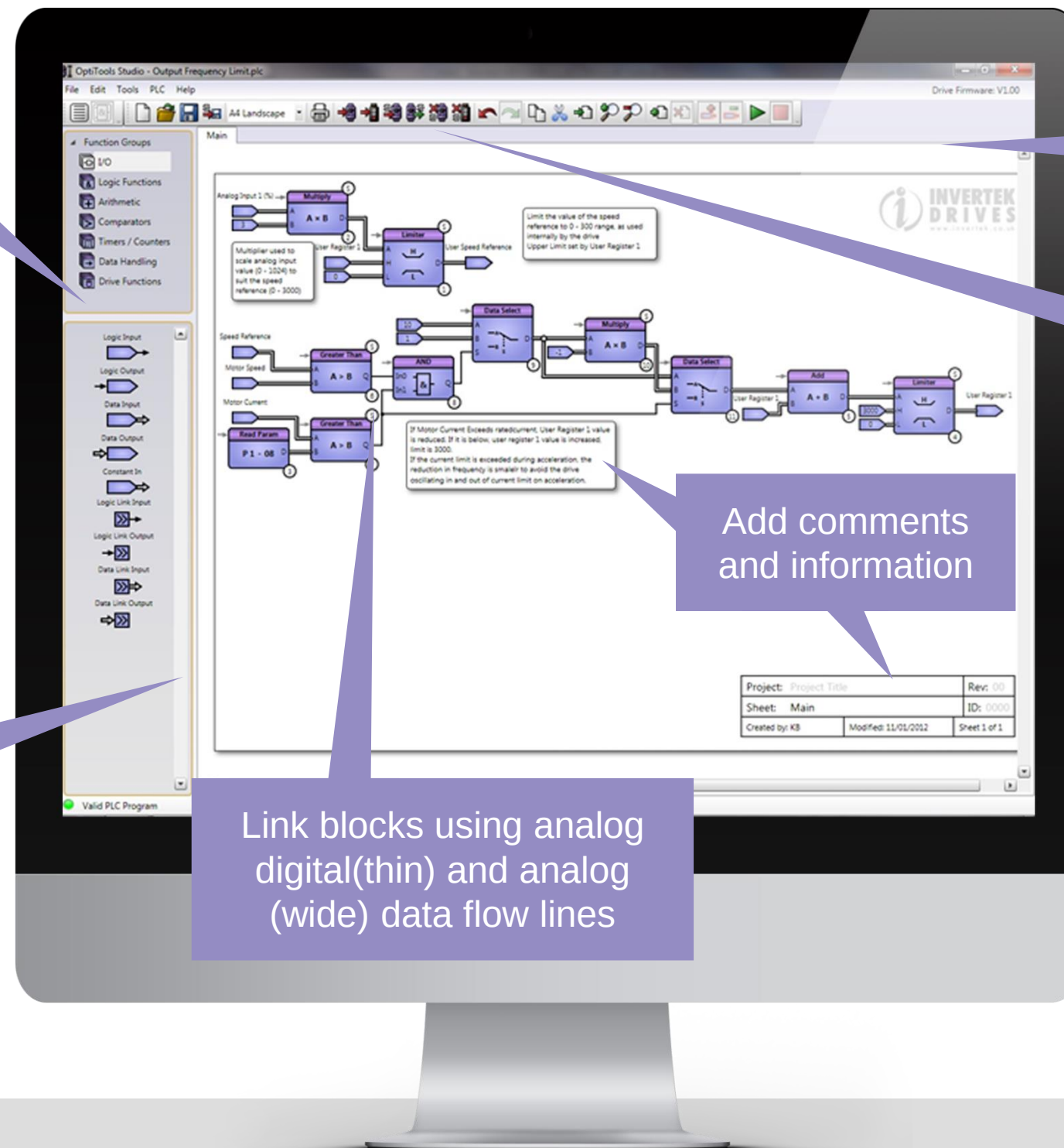
- All new PC Software Package
- For E2, P2, HVAC Drives
- Drive Commissioning
- Parameter Upload / Download / Storage / Edit
- Online Monitoring
- Scopemeter Function & Data Logger
- Parameters Changed Display / Comparison
- PLC Programming – Optional Bolt-On
- USB or Bluetooth connectivity



- Intuitive Function block approach
- Extensive function block library available
 - Logic Functions > AND, OR, NOT, NAND, NOR etc
 - Timer Functions > Delay On, Delay Off, Pulse etc
 - Comparators > Equal, Greater Than, Less Than etc
 - Simple Maths Functions > Add, Subtract, Multiply, Divide etc
 - Complex Maths functions > Remainder, ABS, Sign, Negate
 - + more
- Analog variables and Digital states can be linked and defined
- Advanced Drive Integration and Control features
 - Customised messages on OLED display
 - Special User Parameters



Function Block based PLC programming



Library of available functions

Projects can be simulated

Load to drive or Optistick

Add comments and information

Drag and Drop onto workspace

Link blocks using analog digital(thin) and analog (wide) data flow lines

Accessories & Options



External Remote Keypad Options

altus

- Optiport – Remote Keypad with LED 7 Segment Display
- Optipad – Remote Keypad with OLED Display
- Universally compatible with E2, P2, HVAC Drives



2nd Generation Optistick

altus

Rapid Commissioning

- Allows rapid copying of parameters between multiple drives
- Provides Bluetooth wireless interface to a PC running OptiTools Studio
- Backup and restore of drive parameters

OPT-2-STICK-IN



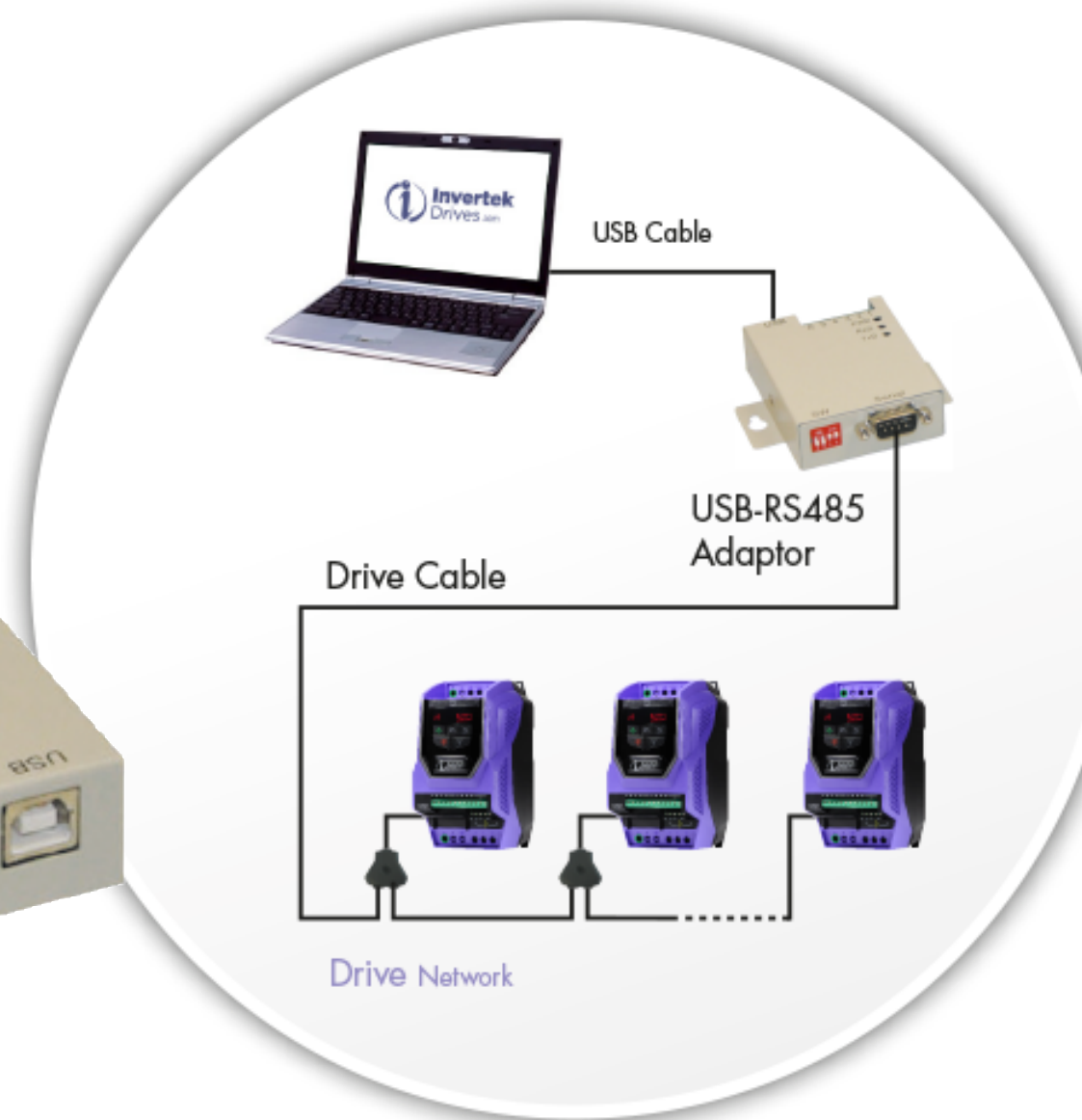
 **Bluetooth®**



OPTIDRIVE™ 

PC Connection Kit

- To provide interface between PC and drive
- For use with OptiTools Studio PC software
- Panel mount possibility
- Provides electrical isolation between PC and drive network



ODP-2 : 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



External I/O Module

- Stand alone IO Module
 - 5 x Digital Inputs accessible via PLC function register
 - 3 x NO Relay Outputs
 - Standard functions assigned (Drive Healthy, Drive Running, Drive Tripped)
 - Alternative functions can be assigned via PLC function
- Connects via RJ45 cable
- Part Number....

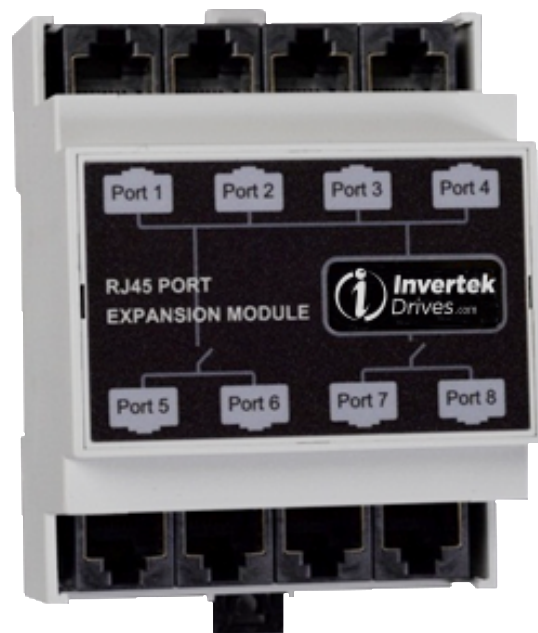
ODP-2-CANIO-IN



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

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



Thank you





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