INVERTEK DRIVES
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OPTIDRIVE OPTIPORT USER GUIDE

Note:

This is suitable for use on Optidrives only.

Part No. – OD-OPORT-xx

SAFETY NOTICES

WARNING is given where there is a hazard that could lead to injury or death of personnel.
CAUTION is given where there is a hazard that could lead to damage to equipment.
It is the responsibility of the installer to ensure that the equipment or system into which the product is incorporated complies with the EMC legislation of the country of use. Within the European Union, equipment into which this product is incorporated must comply with 89/336/EEC, Electromagnetic Compatibility.

WARRANTY

Complete Warranty Terms and Conditions are available upon request from your IDL Authorised Distributor.

CAUTION

- Store the Option in its box until required. It should be stored in a clean and dry environment. Temperature range –40°C to +60°C.

- Install the Option onto the Optidrive by inserting the row of 11 pins into the terminal connector of the Optidrive, ensuring that the terminals are tightened.

- If the Option is being used with Size#1 Optidrive, care should be taken to support the Option when the terminal screws of the Option are being tightened or loosened.

WARNING

- Optidrives and the Options should be installed only by qualified electrical persons and in accordance with local and national regulations and codes of practice.
- **Electric shock hazard!** Disconnect and **ISOLATE** the Optidrive before attempting any work on it. High voltages are present at the terminals and within the drive for up to 10 minutes after disconnection of the electrical supply.
- Where the electrical supply to the drive is through a plug and socket connector, do not disconnect until 10 minutes have elapsed after turning off the supply.

THROUGH PANEL MOUNTING DETAILS

55   15

90

10

Diagrams not to scale

Panel cut-out details

36   M4 clearance

72   76

45
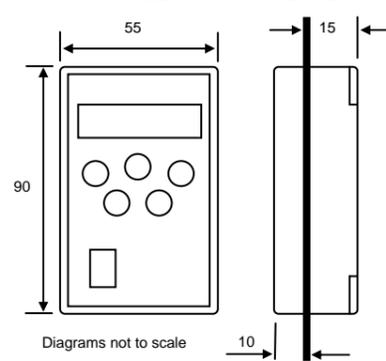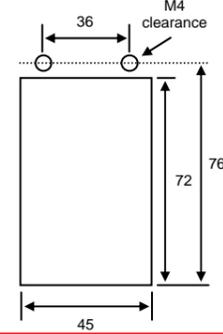
MECHANICAL INSTALLATION – THROUGH PANEL MOUNT
The panel on to which the Optiport is to be mounted should be cut out in accordance with the above diagram.
After removing the Remove the four corner covers, remove the 4 screws holding the two halves of the OptiPort together.
Place the front of the OptiPort on the front of the panel and the rear housing on the rear of the panel.
Replace and secure the 4 screws, thereby securing the OptiPort in position on the panel.

EASY STARTUP

Remote keypad operation
- Connect OptiPort using **line-of-sight**, **OptiLink** or **RS485** communications as required.
- Connect +24V supply to OptiPort. Display shows "SCtrP" (serial communications trip) until the Optidrive is powered up. Once communication with the Optidrive is established, the information on the Optidrive is replicated on the display of the OptiPort.
- All parameters can be accessed and edited using the Navigate ⇔ key, exactly as on the Optidrive.

Display scaling
(requires Optidrive software V1.06 or later)
- P-41 provides a multiplication factor allowing the user to scale the OptiPort display to match application requirements.
- To scale the Optidrive speed, set P-42 = 0 and set P-41 to the scaling factor requried, where the displayed value is given by
  <Speed in Hz> x P-41   if P-10 = 0
  or   <Speed in rpm> x P-41   if P-10 > 0
- To scale the Optidrive current, set P-42 = 1 and set P-41 to the scaling factor requried, where the displayed value is given by
  <Current in Amps> x P-41

PI control
(requires Optidrive software V1.06 or later)
- Connect the feedback transducer output to terminal P3 on the OptiPort. If the PI control uses the Optidrive motor current for feedback, no connection to P3 is required.
- Set P-49 to the feedback transducer format (eg 4..20mA).
- Set P-47 to the type of PI control required. This includes inverse PI control, where an increase in the speed of the motor results in a decrease in the level of feedback.
- If a fixed (digital) set-point is used, set P-48 to the required value (100% = maximum value from feedback transducer) and set P-46 = 1.
- Ensure that the Optidrive is hardware enabled (place link between Optidrive terminals 1 and 2)
- The P-gain and I-gain of the PI controller are adjusted using P-43 and P-44. Setting either P-44 or P-44 to a non-zero value automatically enables the Optidrive.

See reverse side for further information

SPECIFICATION

Power Supply requirements :	24V DC +/-20%, or 18V AC +15% /-5%, 1.5W
Analog input range (voltage) :	0..10V DC, 30V max,
Analog input range (current) :	4..20mA DC,30mA max
Relay output contacts :	250V AC / 30V DC, 1A
RS485 interface :	Industry standard 2 wire +5V differential
Environmental :	IP54
Operating temperature range	0…55C

Line-of-sight operation
- The OptiPort should be panel mounted within 1m of the Optidrive IR window. Moving the OptiPort away from the ideal position directly in front of the Optidrive will reduce the range.
- When used as a remote keypad for the Optidrive, the OptiPort needs only to have its supply voltage (+24V) connecting between terminal P1 and P2 for complete functionality.

Optical fibre (OptiLink) operation
- If the OptiPort is to be mounted such that line of sight operation is not possible, the OptiPort can be connected using OptiLink – a fibre optic link.
- The Optilink should be connected to the rear of the OptiPort and the front of the Optidrive in accordance with the Optilink kit installation guidelines.
- The power supply (+24V) for the OptiPort should be connected between terminals P1 and P2 on the rear of the OptiPort.

RS485 operation
- For transmission distances greater than 1m, the 2-wire RS485 data link should be used for communication between the OptiPort and the Optidrive.
- Connect the RS485 option module to the Optidrive in accordance with the RS485 installation guidelines. This should be connected in 2-wire mode.
- Connect the RS485 link to terminals P7, P8 and P9 (see above diagram for pin-out). Transmission lengths of up to 100m can be achieved using the RS485 data link.

User Guide

SAFETY
This option is specifically designed to be used with the Optidrive variable speed drive product and is intended for professional incorporation into complete equipment or systems. If installed incorrectly it may present a safety hazard. The Optidrive uses high voltages and currents, carries a high level of stored electrical energy, and is used to control mechanical plant that may cause injury. Close attention is required to system design and electrical installation to avoid hazards in either normal operation or in the event of equipment malfunction.
System design, installation, commissioning and maintenance must be carried out only by personnel who have the necessary training and experience. They must read carefully this safety information and the instructions in this Guide and follow all information regarding transport, storage, installation and use of the Option module, including the specified environmental limitations.
Please read the IMPORTANT SAFETY INFORMATION below, and all Warning and Caution boxes elsewhere.

Part No. 82-OPORT-IN
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Line-of-sight OptiPort operation

1m max

Panel mounted OptiPort
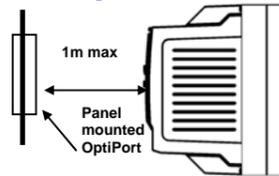
Fibre optic OptiPort operation

Max fibre optic length = 1m

Panel mounted OptiPort
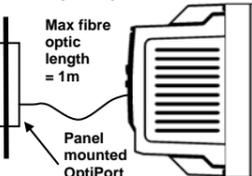
STANDARDS CONFORMITY

An Optidrive fitted with this Option complies with the following standards:

- CE-marked for Low Voltage Directive.
- IEC 664-1 Insulation Coordination within Low Voltage Systems.
- UL 840 Insulation Coordination for electrical equipment.
- EN50081-2 EMC Generic Emissions Standard, Industrial Level.
- EN50082-2 EMC Generic Immunity Standard, Industrial Level.
- Enclosure ingress protection, EN60529 IP00, NEMA 250.
- Flammability rating according to UL 94.

FRONT PANEL MOUNTING DETAILS

55

90

Diagrams not to scale

Panel cut-out details
M3 clearance

32   35   52.5

38
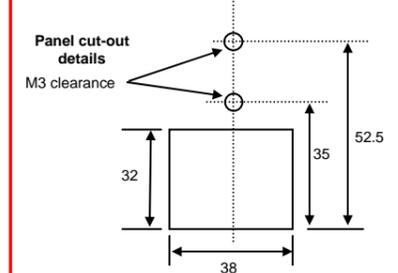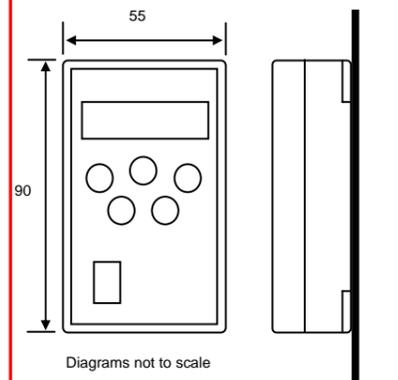
MECHANICAL INSTALLATION – FRONT PANEL MOUNT

The panel on to which the Optiport is to be mounted should be cut out in accordance with the above diagram.

The OptiPort should be secured in position on the panel using 2 M3 screws. The length of these screws should be equal to the thickness of the panel + 5mm.

MANAGING THE KEYPAD
The OptiPort keypad is operated in an identical fashion to the keypad on the Optidrive.
To access the Parameter Set, press the Navigate key ⇔ for >1 sec.
- Scroll through P-01 to P-14 (and roll over to P-01) by pressing σ or τ.
- **To display the parameter value**, press ⇔.
- **To edit** the parameter value, press σ or τ.
- **To return to the parameter** number, press ⇔.
- **To exit from edit mode**, press ⇔ for >1 sec or press no button for >20 sec.
- **To access the Extended Parameter Set**, set P-14 = 101 and press ⇔.

Display panel

START   NAVIGATE
STOP   UP
DOWN
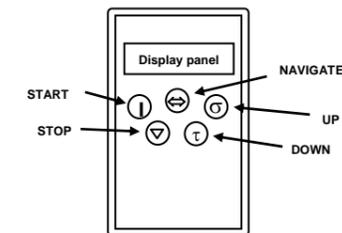
USER TERMINAL CONNECTORS

P7 P8 P9

P1 P2 P3 P4 P5 P6
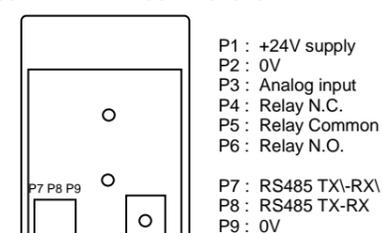
OptiPort rear view

P1 : +24V supply
P2 : 0V
P3 : Analog input
P4 : Relay N.C.
P5 : Relay Common
P6 : Relay N.O.
P7 : RS485 TX\-RX\
P8 : RS485 TX-RX
P9 : 0V

OPERATING IN KEYPAD MODE
To operate in keypad mode, ensure that the Optidrive is hardware enabled by linking terminals 1 and 2 on the Optidrive

Presetting target speed in keypad mode
- Set P-12 = 1 or 2. Whilst the drive is stopped, press the <STOP> key. The value of the digital potentiometer will be displayed, indicating target speed. Use the UP and DOWN keys to select the required target speed.
- Press the <STOP> key to return to the real time display showing StoP, or the <START> key to start the Optidrive ramping up to the target speed.

To vary the speed in real time with P-12 set to 1:
- Press the START key. The Optidrive will ramp up to the preset speed set in the digital potentiometer.
- Press σ to increase speed.
- The drive will run forward, increasing speed until σ is released. The rate of acceleration is limited by the setting in P-03.
Either Press τ to decrease speed.
  - The drive will decrease speed until τ is released. The rate of deceleration is limited by the setting in P-04.
Or Press the STOP key.
  - The drive will decelerate to rest at the rate set in P-04.
- The display will finally show StoP at which point the drive is disabled.
- Pressing the START key once more results in the drive running back up to the speed at which it was previously running (digital potentiometer value)

To reverse direction of rotation with P-12 = 2:
- Press the START key. The drive ramps up to the preset speed as set in the digital potentiometer.
- Press σ to increase speed.
- The drive will run forward, increasing speed until σ is released. Acceleration is limited by the setting in P-03. The maximum speed is the speed set in P-01.
- Press the START key again. The motor will reverse its direction of rotation.
- Press the STOP key to decelerate the motor to standstill.
- Whenever the drive is started, it will start with a positive speed.

LOCKING ACCESS TO PARAMETERS
- To prevent unauthorised access to the parameter set via the OptiPort, set P-38 = 2. This locks parameter changes in the Optidrive and prevents any access whatsoever to parameters via the OptiPort.
- The Operational information (speed, current etc) can be accessed as normal
- To unlock parameter access, change P-38 back to 0 via the *Optidrive* keypad.

STANDARD PARAMETER SET

Par.	Description	Range	Default	Explanations	User
P-01	Maximum speed	P-02 to 5*P-09 (max 1kHz)	50Hz	Maximum speed limit – Hz or rpm. See P-10	
P-02	Minimum speed	0 to P-01 (max 1kHz)	0Hz	Minimum speed limit – Hz or rpm. See P-10	
P-03	Accel ramp time (s)	0 to 3,000s	5s	Acceleration ramp time from 0 to base speed (P-9) in seconds	
P-04	Decel ramp time (s)	0 to 3,000s	5s	Deceleration ramp time from base speed (P-9) to 0 in seconds	
P-05	Stop mode select	0, 2: Ramp to stop 1: Coast to stop	0	If the supply is lost and P-05=0 then the drive will try to continue running by reducing the speed of the load using the load as a generator. If P-05=2, the drive ramps at P-07 to stop.	
P-06	V/F characteristic	0: Constant torque, INDUSTRIAL 1: Pump/fan, HVAC	0	Either V = kf (linear) or V = kf ^{2} (pumps / fans with HVAC rating). Note when P-06 is set to 1 the ramps are automatically set to 60 s.	
P-07	*Fast stop (s)*	0.0 to 25s. (Disabled when 0.0s)	0.0s	Deceleration ramp time after mains loss (P-05 = 0 or 2) or when fast stop activated (see P-19). When P-05 = 2 and P-07 = 0, activating the fast stop disables the drive without braking (effectively coasting to stop).	
P-08	Motor rated current	25% -100% of drive current rating	Drive rating	Rated (nameplate) current of the motor (Amps)	
P-09	Motor rated frequency	25Hz to 1kHz	50 Hz	Rated (nameplate) frequency of the motor. Changing P-09 resets P-02, P-10, P-26 & P-28 to 0, & P-01=P-09.	
P-10	Motor rated speed	0, P-09*12 to P-09*60 eg for 50Hz motor, range is 600 to 3000 rpm	0	When non-zero, speed is displayed in rpm in parameters P-01, P-02, P-20…P-23, P-27 and P-28; also slip compensation is automatically activated whenever this parameter is non-zero. – see also P-24	
P-11	Voltage boost	0 to 25% of max output voltage	3%	Applies an adjustable boost to the Optidrive voltage output at low speed to assist with starting 'sticky' loads. For continuos applications at low speed use a forced ventilated motor.	
P-12	Terminal or Keypad control	0: Terminal control 1: Keypad control – fwd only 2: Keypad control – fwd and rev 3: Terminal control master mode (master speed transmitted) 4: Terminal control master mode (analog speed ref transmitted)	0 (Terminal control, no IR transmit)	When P-12 = 2, the keypad START key toggles between forward and reverse, after STOP drive will start in the same direction as it was last running. 3: Terminal control with Optidrive speed info transmitted via IR link (Optiwand can be used when drive stopped). 4: Terminal control with Optidrive scaled speed ramp info transmitted via IR link even when drive stopped (unable to use Optiwand). *(For a more detailed explanation of this parameter see application note AN 24)*	
P-13	Trip log	Last four trips stored	Read only	Most recent 4 trips stored in order of occurrence, *ie* on entry, display shows most recent first. Press σ or τ to step through all four	
P-14	Extended menu access	Code 0 to 9999	0	Set to "101" (default) for extended menu access. Change code in P-37 to prevent unauthorised access to the Extended Parameter Set	

EXTENDED PARAMETER SET

Par.	Description	Range	Default	Explanations	User
P-15	Motor rated voltage	230V product: 40V to 250V 400V product: 40V to 500V	0V 400V	When P-15 is non-zero, the applied motor voltage is controlled and scaled so that the specified voltage is achieved at rated freq (P-09)	
P-16	Analog input format (V / mA)	Voltage: 0-10V, 10-0V, -10-10V Current: 4-20mA, 0-20mA, 20-4mA	0-10V	Analog input format (on terminal 6). Set to "–10 -10" for bipolar analog input	
P-17	Effective Power stage Switching frequency	8, 16, 32 kHz (Sizes 1, 2) 4, 8, 16 kHz (Sizes 3, 4) 4, 8 kHz (Sizes 5, 6)	16 kHz 4 kHz 4 kHz	Effective power stage switching frequency. Improvements in acoustic noise and output current waveform occur with increasing switching frequency at the expense of increased losses within the drive	
P-18	Relay output function	0: Drive enabled 1: Drive healthy 2: Set speed 3: Motor at zero 4: Motor at max speed (P-01) 5: Motor overload (current > P-08)	1 : (Drive healthy)	Relay output function. Contacts closed if selected condition is true. When P-18= 3, (zero speed), the relay contacts close when the output frequency is less than 5% of base frequency. The drive is in overload when the motor current exceeds P-08	
P-19	Digital inputs function	0 to 12	0	Defines function of digital inputs (see also P-16 and Digital Inputs table)	
P-20	Preset / Jog speed 1	-P-01 (reverse) to P-01	50Hz	Defines Preset / Jog speed 1	
P-21	Preset / Jog speed 2	-P-01 (reverse) to P-01	0 Hz	Defines Preset / Jog speed 2	
P-22	Preset / Jog speed 3	-P-01 (reverse) to P-01	0 Hz	Defines Preset / Jog speed 3	
P-23	Preset / Jog speed 4	-P-01 (reverse) to P-01	0 Hz	Defines Preset / Jog speed 4	
P-24	Slip compensation	20% to 250%	100%	Slip correction factor. Value defines the percentage of the internally calculated slip compensation value to be applied. See also P-10.	
P-25	Analog output function	(A) 0:Motor Speed 1:Motor current (D) 2:Drive enabled 3: Set speed	0	Analog output select. When P-25 = 0 then 10V = 100% of P-01, or if P-25 =1 then 10V = 200% of P-08. P-25 = 2 or 3 gives a 10V digital output.	
P-26	V/F characteristic adjustment factor	20% to 250%	100%	Used with P-29 to adjust the V/F characteristic. When P-26 > 100%, motor voltage is increased, when P-26 < 100%, voltage is reduced	
P-27	Skip freq / speed	0 to P-01 (max)	0 Hz	Centre point for skip frequency band. The skip frequency band defined by P-27, P-28 is mirrored around zero for negative speeds.	
P-28	Skip freq / speed band	0 to100% of rated speed/freq. P-09	0 Hz	Width of skip frequency band, the centre of which is defined by P-27.	
P-29	V/F characteristic adjustment frequency	0 to base frequency (P-09) (Function disabled when set to zero)	0 Hz	Sets the frequency at which the V/F adjustment factor in P-26 has full effect. This allows the motor voltage applied at the frequency in P-29 to be increased or decreased by the factor set in P-26.	
P-30	Drive start mode	Edge-r: Close Digital input 1 *after* power up to start drive Auto-0: drive runs whenever Digital input 1 closed. Auto-1..4: as Auto-0, except 1..4 Attempts to restart after a trip	Auto-0	When set to Edge-r, if drive is powered up with Digital Input 1 closed (enabled), drive will not run. The switch must be opened & closed *after* power up or after a clearing a trip for the drive to run. When set to Auto-0, drive will run whenever digital input 1 is closed (if not tripped). Auto-1..4 makes 1..4 attempts to automatically restart after a trip (25s between attempts). If fault has cleared drive will restart. Drive must be powered down, reset on the keypad or reset by re-enabling the drive to reset auto-reset counter. When P-12 is set to 1 or 2, P-30 changes automatically to Edge-r.	
P-31	DC injection voltage	0.1 to 20% of max voltage	10%	If P-05 selection is 'ramp to stop', P-31 sets the level of DC braking applied when the ramp reaches zero	
P-32	DC injection braking time	0 to 250s	0s	If P-05 selection is 'ramp to stop', P-32 sets the duration of DC braking applied when the ramp reaches zero	
P-33	*DC injection on enable*	0: Inactive 1: Enabled	0	When 1, DC injection is applied whenever the drive is enabled	
P-34	External Brake Resistor	0: No brake resistor fitted 1: Optidrive braking resistor 2: Customer specified resistor	0	Activates the internal braking transistor. When P-34 =1 the braking resistor is protected by the drive against overload. When P-34 = 2, a thermal overload relay must be used to protect the resistor and drive.	
P-35	Speed reference scaling factor (analog or digital)	1% to 500%	100%	Scales the analog input at control terminal 6 up or down, or the digital reference in keypad (or Slave) mode up or down (see P-12).	
P-36	Drive address (s-comms)	0 to 63	1	Distinct drive address for serial comms. 0 = comms disabled	
P-37	Access code definition	0 to 9999	101	Defines Extended Parameter Set access code, P-14	
P-38	Parameter access lock	0: Parameters can be changed, auto-saved on power down 1: Parameter changes not saved on power down 2: Read-only. No changes allowed.	0 (write access and auto-save are enabled)	Controls user access to parameters. WhenP-38 = 0, all parameters can be changed and these changes will be stored automatically. When P-38 = 1, changes may be made but these will not be stored when the Optidrive powers down. When P-38 = 2, parameters are locked and cannot be changed thus preventing unauthorised access.	
P-39	Hours run meter	0 to 99999 hours	Read only	Not affected by reset-to-default command	
P-40	Drive identifier	Drive rating / Software version	Read only	Drive rating, drive type and software version codes	

OPTIPORT PARAMETER SET

Note : The OptiPort parameter set is only available when the OptiPort is communicating with an Optidrive fitted with V1.06 software or later

Par.	Description	Range	Default	Explanations	User
P-41	Display Scaling Factor	0.001 to 20.00	0.000	Scales the displayed value to suit the application. Can be set to scale speed in Hz, rpm or the value of the analog input (usually used when PI control is active)	
P-42	Display scaling factor reference	0: speed (Hz if P-10 = 0, else rpm) 1: OptiPort analog input	0	If 0 is selected, the displayed value is Optidrive speed x P-41 If 1 is selected, the displayed value is Vin x 10 x P-41, where Vin is the %age of the max analog input value (100% = max)	
P-43	P-Gain of PI controller	0, 0.1 to 100	0	Sets the proportional gain of the PI controller. Setting this to zero disables the PI controller.	
P-44	I-Gain of PI controller	0, 0.1 to 100s	0s	Sets the integral gain of the PI controller. Setting this to zero allows a pure proportional gain to be set.	
P-45	PI control operating mode	0 : Direct mode 1 : Inverse mode 2 : Reference + feedback summation	0	Direct mode results in the Pi controller output increasing when reference > feedback. Inverse mode results in output decreasing when reference > feedback.	
P-46	PI reference input select	0: Optidrive analog input 1: P-48 preset	0	Determines what value is used as the reference for the PI controller. If a potentiometer or other analog signal is used, this should be connected to the Optidrive analog input and P-46 set to zero. If a preset value is required, set P-46 to 1 and set the required preset value in P-48.	
P-47	PI control feedback source	0: OptiPort analog input feedback 1: Motor current feedback 2: OptiPort analog input feedback with variable max speed limit 3: OptiPort analog input feedback with variable min speed limit 4: Motor current feedback with variable max speed limit 5: Motor current feedback with variable min speed limit 6: Optidrive DC bus voltage feedback with variable max speed limit 7: Optidrive DC bus voltage feedback with variable min speed limit	0.0s	Sets the mode of operation of the PI controller. When P-47 = 4, PI control with motor current feedback where the OptiPort analog input scales the max speed limit from 0 to P-01 When P-47 = 5, PI control with motor current feedback where the OptiPort analog input scales the min speed limit from 0 to P-01 When P-47 = 6, PI control with Optidrive DC bus voltage feedback where the OptiPort analog input scales the max speed limit from 0 to P-01 When P-47 = 7, PI control with Optidrive DC bus voltage feedback where the OptiPort analog input scales the min speed limit from 0 to P-01	
P-48	PI preset reference	0..100%	0%	When P-46 = 1, this value is used as the reference for the PI controller. The maximum value (100%) equates to maximum feedback value (or rated current if P-47 = 1)	
P-49	OptiPort analog input format	Voltage : 0..10 V, 10..0 V Current : 4..20mA 0..20mA 20..4mA	0..10V	Defines the format of the analog input. Most feedback transducers are either 0..10V or 4..20mA.	
P-50	OptiPort relay output	0: Optidrive Enabled 1: Optidrive Healthy 2: Drive at set speed 3: Motor speed > zero speed 4: Motor at max speed 5: Motor in overload	1	Defines the function of the OptiPort output relay. When the set condition is satisfied, the relay is activated (N.O. contacts closed). If communication with the Optidrive is lost, the relay N.O. contacts open (fault), ie the set condition is not satisfied	

Notes:
The PI controller automatically activates when either P-43 or P-44 are changed to a non-zero value. The hardware enable signal (link between terminals 1 and 2) on the Optidrive must be present before the Optidrive will run.
If P-47 = 3, the PI controller can be used to sum two analog values. To operate in this mode, set P-46 = 0 and ensure that P-44 = 0. P-43 can then be used as a scaling factor. When P-16 = -10..10 (bipolar input), the Optidrive analog input can be used as an +/- offset to the OptiPort analog input.
When P-42 = 1, the display scaling factor (P-41) can be used to display the value of the analog feedback transducer. This could then directly display pressure, temperature, flow rate etc in any desired units. To calculate the scaling factor value when scaling the analog input, use the following formula :

$$\text{P-41 value (scaling factor)} = \frac{\text{required display value at maximum analog input value}}{1200} \quad \text{eg if } 150^{\circ}C \text{ corresponds to } 20mA \text{ on a } 4..20mA \text{ transducer,}$$
$$\text{set P-41 to } 150 / 1200 = 0.125$$

OPTIPORT PARAMETER ZERO

Par.	Description	Range	Default	Explanations	User
P-00	Provides a *read only* window into the OptiPort. Access, scroll, change and exit are as for any other parameter. The selected variable is indicated at the left hand side of the display. All P-00 values are read-only	1 to 9	1	1 Unscaled OptiPort analog input 0..100% 2 Scaled PI reference input 0..100% 3 Scaled PI feedback input 0..100% 4 PI error input 0..max speed limit (Hz/rpm) 5 PI controller P-term 0..max speed limit (Hz/rpm) 6 PI controller I-term 0..max speed limit (Hz/rpm) 7 Reserved 8 PI controller output 0..max speed limit (Hz/rpm) 9 Reserved	

Note : P-00 parameters, otherwise known as watch window parameters, provide access to internal values of the OptiPort – in particular the PI controller. P-00 (4) … (8) are speed related and will be displayed in Hz if P-10 = 0, otherwise they will be displayed in rpm.

TROUBLESHOOTING - TO CLEAR A TRIP CONDITION Remove the condition which caused the trip and press the STOP key. The drive will restart according to the setting of P-30.

If the motor is stopped and the display shows **StoP**, there is no fault; the drive output is disabled and ready to run.
NOTE: If the application requires terminals 1 and 2 to be permanently connected, P-30 must be set to "Auto-0".

Fault Code	What has happened	What to do
P-deF	Default parameters loaded.	Press the STOP key to acknowledge. All parameters will have their factory default values
O-I	Over current on Optidrive output. Excess load on the motor.	*Motor at constant speed:* check for overload and malfunction. *Motor starting:* load stalled or jammed. *Motor accelerating/decelerating:* accel / decel time too short. **Check for star-delta motor wiring error !**
O-Uolt	Over voltage in Optidrive.	Mains supply problem, or decel ramp time (P-04) too short. Increase ramp time or fit braking resistor
U-Uolt	Under voltage in Optidrive.	This occurs routinely when power is switched off. If it occurs during running, check power supply voltage
OI-b	Brake resistor short circuit.	Check cabling first. If ok, check resistor for burn out / short circuit or too low a resistance value.
I.t-trP	Overload. 150% current for >1 min.	Check driven machine; drive may be too small for the load
th-Flt	Faulty thermistor on heatsink.	*Refer to your IDL Authorised Distributor.*
E-triP	External trip (on digital input 2 or 3)	External trip on digital input – see P-19 (motor thermistor ?)
EE-F	Memory chip fault. Defaults loaded	Try again. If problem recurs, *refer your IDL Authorised Distributor.*
PS-Trp	Internal power stage fault.	Check wiring first, look for ph-ph or ph-Earth short circuit. Check drive is not repeatedly driven into overload. Check drive ambient temp, Added space or cooling needed?
O-t	Heatsink over temperature.	Check drive ambient temp. Added space or cooling needed? Larger enclosure size required?
Iin-F	Current analog input out of range	Check input current in range defined by P-16
OL-br	Braking Resistor Overload	Increase deceleration time (P-04) or reduce braking resistor value
P-LOSS	Mains supply phase loss	Check integrity of 3phase supply
SC-trP	Serial communications trip	Check communication integrity between OptiPort and Optidrive

Acceleration/ deceleration: Very short ramp times may require >150%. This may result in the accel/decel rate not being achieved, and/or O-I fault.
Overload protection: When the drive is delivering >100% full load current, an I.t integral will result in the drive tripping, should the I.t limit be exceeded. This occurs after 1 minute at 150%. When the Optidrive is in an overload condition, the display will flash.
Communications trip : If the OptiPort cannot establish communications with the Optidrive, the message "SC-trP" will be displayed. Test communications by holding the OptiPort in front of the Optidrive (line-of-sight communications). If communications still cannot be established, either the OptiPort or Optidrive is faulty.