

Introducing a new model with a detachable monitor!! Plus the standard model. These models meet all your needs.

PULCOM V10A

In-process & Post-process both with indicator control units



V10A

Standard type

PULCOM V10S

In-process & Post-process both with indicator control units



Detachable monitor type

Expanded screen configuration



Workpiece diagram/
Measuring result display



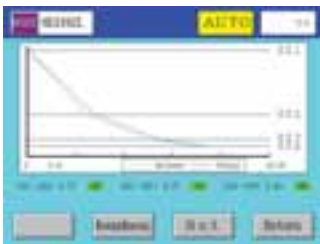
Measuring item display



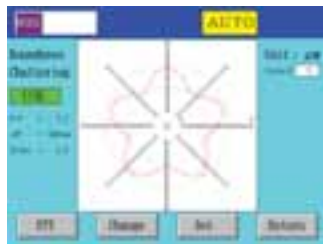
Measuring result display



SPC display



Machining status display



Roundness display



Self diagnosis function



Multiple language display (Japanese, English, Chinese, Korean)



Standard type



Reverse type



Large needle type



Large needle type (dual display)

Machine Control Gages

■ Features

Intelligent Judgment Control

SPC control (post process) and display and output of ellipticity, chattering judgment and machining status (in-process) provide high added value.

Multipoint Measurement

Hardware that allows connection of a maximum of 4 judgment heads and software that permits a maximum of 32 items to be measured provide the optimum configuration for simultaneous parallel processing.

Dramatically Enhanced Operational Ease

A 6.5 inch bright TFT color LCD with a touch panel has been adopted for the display unit. This dramatically enhances operational ease. Simply touch the screen you wish to set or change when making adjustments or performing other operations.

Many More Display Functions

Real-time graphic display for in-process judgment enables machining status to be determined at a glance, simplifying discovery of problems (signal can be optionally output in the event of a problem). The machining status can be replicated when a defective workpiece is discovered in a subsequent process, simplifying analysis of the cause of the defect. For post-process judgment, the display can be tailored to the functions used (e.g. overall display of all judgment items and statistical processing display).

Meter Display

Machining status can be displayed on the LCD for in-process measurement, providing a realistic view of machining conditions.

More Standard Functions

The V10 has a variety of standard functions, including auto mastering, operational expression input, smoothing and extended range display/high resolution.

Overall Data Display

Display of a workpiece diagram, judgment items and judgment results on a single screen facilitates judgment of the current status.

Supports 4 Languages

The display can be switched to Japanese, English, Chinese or Korean so it can be used easily overseas.

Size Shift Function for Multi-Product Lines (Option)

Combining this unit with an extended range measuring head enable judgment of multiple axis workpieces without changing the setup. A maximum of 1,280 size shift settings can be registered.

In-Line Roundness (Option)

Roundness can be measured during or after machining. Roundness results are displayed as polar coordinates and output as an OK or NG judgment. The provision of an FFT analysis function facilitates judgment of chattering and a regular diameter distorted circle, too.

Detachable Front Panel (V10S)

The front panel is detachable so you can position it so it is easy for the operator to use. The control panel is built-in to the main unit.

■ Optional Functions

- In-line roundness function
- BCD/binary input/output function
- RS232C input/output function
- Memory function (Max., min., point-to-point values)
- Workpiece diagram display function
- In-process machining status display (with defective machining, excessive machining time and output functions)
- Temperature compensation
- External zeroing
- Size shift function
- Auto calibration
- Abbreviated wiring
- Analog output function
- P100 (Integral) function

■ Main Optional Units

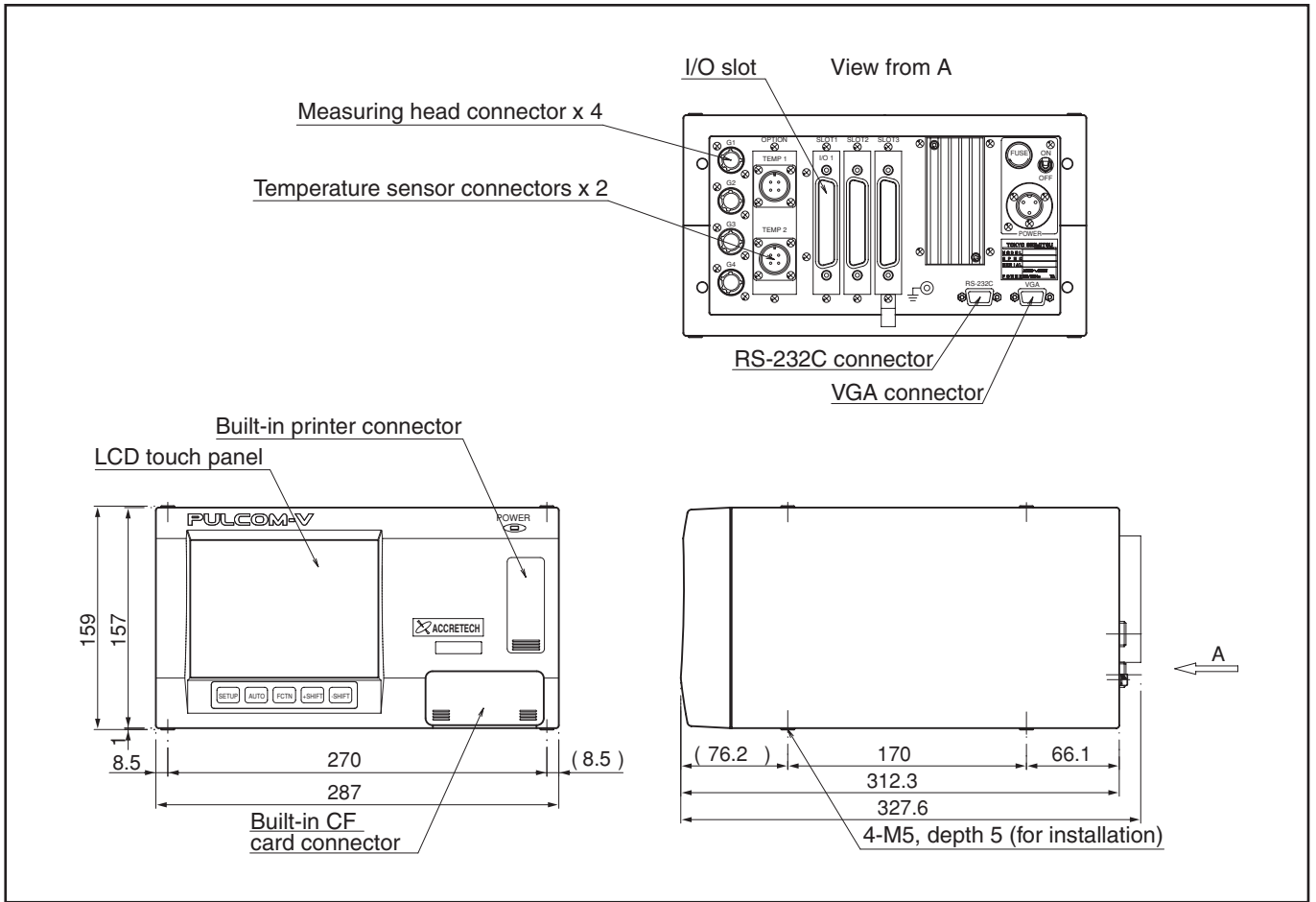
- Thermal printer compatible with graphic functions
- Temperature sensor
- CF card (with PC card folder)



Specifications

Model	E - PV 15
Display	6.5" TFT color LCD
Display items	Measured results, list of items (meter display for in-process)
Display range	Changeover between $\pm 50\mu\text{m}$, $\pm 100\mu\text{m}$, $\pm 250\mu\text{m}$, $\pm 500\mu\text{m}$, $\pm 1000\mu\text{m}$, $\pm 2500\mu\text{m}$ and $\pm 5000\mu\text{m}$
Resolution	0.01 μm , 0.05 μm , 0.1 μm , 0.5 μm , 1 μm
Display unit	Select μm , mm or inch
No. of detectors	4
No. of measured items	Max. 32
Input method	Touch panel/shift key
Judgment output	Standard: I/O1 (I/O3 when insufficient)
Multiplication calibration	Key input
Sampling speed	1ms or less
RS-232C	Standard
Printer output	Standard
Changing of program	Key operation after CF card is input
Memory function	Option
Waterproof standard	IP54
CE marking	Individual
Size and weight (V10A)	298(W) × 315(D) × 159(H) mm, 7kg (mounting dimensions same as U2000A)

V10A Outer Appearance/Dimensions Diagram



I/O-1 Input/Output Signals

Standard port for basic functions

- (1) Connector: 57E-30500-D76 (50P, made by DDK)
- (2) Cable: Provided with 6m shielded wire cable, outer diameter ϕ 12.4
- (3) Output specifications: Select open collector or open drain
- (4) Pin arrangement

Output			
Signal name	No.	ID	
(*1)	(*2)	-NG	1 Pink 1
		OK3	2 Pink 2
		OK2	3 Pink 3
		OK1	4 Pink 4
		+NG	5 Pink 5
Meas. 1	Meas. 2	-NG	6 Pink 6
		OK3	7 Pink 7
		OK2	8 Pink 8
		OK1	9 Pink 9
		+NG	10 Pink 10
Meas. 1	Meas. 2	SZ4	-NG
		SZ3	OK3
		SZ1	OK2
		SZ0	OK1
			+NG
Meas. 2	Meas. 3	-NG	11 Yellow 1
		OK3	12 Yellow 2
		OK2	13 Yellow 3
		OK1	14 Yellow 4
		+NG	15 Yellow 5
Meas. 2	Meas. 4	-NG	16 Yellow 6
		OK3	17 Yellow 7
		OK2	18 Yellow 8
		OK1	19 Yellow 9
		+NG	20 Yellow 10
Overall OK output	21	Green 1	
Overall NG output	22	Green 2	
Auto master complete output	23	Green 3	
Auto master NG	24	Green 4	
Meas. prep. complete output (READY)	25	Green 5	
Retract OK	26	Green 6	
All judgment complete output	27	Green 7	
Judgment complete output	28	Green 8	
CPU Run	29	Green 9	
	30	Green 10	
All auto master complete output	31	Gray 1	
N.C.	32	Gray 2	
Output signal common terminal (COMMON)	33	Gray 3	

* The above is an ordinary example. The relationship between the signals and pin numbers may change depending upon the specifications.

Input			
Signal name	No.	ID	
Individual judgment Gr. 1 start	34	Gray 4	
Individual judgment Gr. 2 start	35	Gray 5	
Individual judgment Gr. 3 start	36	Gray 6	
Individual judgment Gr. 4 start	37	Gray 7	
Individual judgment Gr. 1 reset	38	Gray 8	
Individual judgment Gr. 2 reset	39	Gray 9	
Individual judgment Gr. 3 reset	40	Gray 10	
Individual judgment Gr. 4 reset	41	White 1	
Auto master Gr. 1 command	42	White 2	
Auto master Gr. 2 command	43	White 3	
Auto master Gr. 3 command	44	White 4	
Auto master Gr. 4 command	45	White 5	
	46	White 6	
	47	White 7	
	48	White 8	
	49	White 9	
	50	White 10	
Input common terminal (COMMON)			

- Make sure to ground the shielded wiring.
- Do not connect any terminals to the empty items.
- Input signal: 10mA or less per signal.
- Output signal: Use at DC24V, 40mA or less.

(*1) Example of a sizing instrument with post.
(*2) Example of 4 items of post

I/O-2 Input/Output Signals (Optional)

Expansion port for BCD/binary data output

- (1) Connector: 57E-30360-D76 (36P, made by DDK)
- (2) Cable: Provided with 6m shielded wire cable, outer diameter ϕ 10.8
- (3) Output specifications: Select open collector, open emitter or open drain
- (4) Pin arrangement

Output			
Signal name	No.	ID	
BCD output 1×10^n	1	Pink 1	
BCD output 2×10^n	2	Pink 2	
BCD output 4×10^n	3	Pink 3	
BCD output 8×10^n	4	Pink 4	
BCD output $1 \times 10^{n+1}$	5	Pink 5	
BCD output $2 \times 10^{n+1}$	6	Pink 6	
BCD output $4 \times 10^{n+1}$	7	Pink 7	
BCD output $8 \times 10^{n+1}$	8	Pink 8	
BCD output $1 \times 10^{n+2}$	9	Pink 9	
BCD output $2 \times 10^{n+2}$	10	Pink 10	
BCD output $4 \times 10^{n+2}$	11	Yellow 1	
BCD output $8 \times 10^{n+2}$	12	Yellow 2	
	13	Yellow 3	
Over	14	Yellow 4	
"-" polarity	15	Yellow 5	
Data valid	16	Yellow 6	
Output signal common terminal (COMMON)	17	Yellow 7	

Measuring item resolution μ m	Over signal μ m
0.01	10.00 or more
0.05	10.00 or more
0.1	100.00 or more
0.1	100.00 or more
1	1000 or more

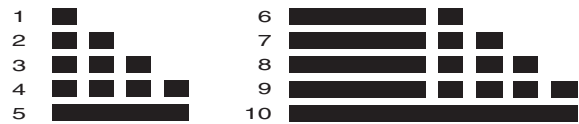
* The above is an example for BCD output specifications. The relationship between the signals and pin numbers may change depending upon the specifications.

Input			
Signal name	No.	ID	
Measurement 1 request	18	Yellow 8	
Measurement 2 request	19	Yellow 9	
Measurement 3 request	20	Yellow 10	
Measurement 4 request	21	Green 1	
	22	Green 2	
	23	Green 3	
	24	Green 4	
	25	Green 5	
Input common terminal (COMMON)	26	Green 6	
Data accept	27	Green 7	
N.C.	28	Green 8	
N.C.	29	Green 9	
N.C.	30	Green 10	
N.C.	31	Gray 1	
N.C.	32	Gray 2	
N.C.	33	Gray 3	
N.C.	34	Gray 4	
N.C.	35	Gray 5	
N.C.	36	Gray 6	

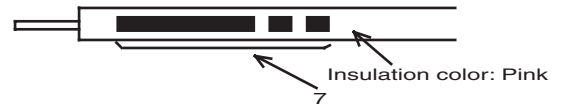
- Make sure to ground the shielded wiring.
- Do not connect any terminals to the empty items.
- Input signal: 10mA or less per signal.
- Output signal: Use at DC24V, 40mA or less.

I/O Cable Identification

(Common for I/O-1, I/O-2 and I/O-3)



Example: Pink 7



I/O-3 Input/Output Signals (Optional)

Expansion port for optional function control signals

- (1) Connector: 57E-30360-D76 (36P, made by DDK)
- (2) Cable: Provided with 6m shielded wire cable, outer diameter ϕ 10.8
- (3) Output specifications: Select open collector or open drain
- (4) Pin arrangement

Input			Output		
Signal name	No.	ID	Signal name	No.	ID
Workpiece select input (BCD 4×10^1)	1	Pink 1	Measurement 4 workpiece pass	26	Green 6
Workpiece select input No. 1 or (BCD 1×10^0)	2	Pink 2	Measurement 3 workpiece pass	27	Green 7
Workpiece select input No. 3 or (BCD 4×10^0)	3	Pink 3	Measurement 2 workpiece pass	28	Green 8
Workpiece select input No. 4 or (BCD 8×10^0)	4	Pink 4	Measurement 1 workpiece pass	29	Green 9
Workpiece select input No. 5 or (BCD 1×10^1)	5	Pink 5		30	Green 10
Workpiece select input No. 6 or (BCD 2×10^1)	6	Pink 6		31	Gray 1
Measurement 1 memory reset	7	Pink 7		32	Gray 2
Measurement 2 memory reset	8	Pink 8		33	Gray 3
Measurement 3 memory reset	9	Pink 9	N.C.	34	Gray 4
Measurement 4 memory reset	10	Pink 10	N.C.	35	Gray 5
	11	Yellow 1	Output signal common terminal (COMMON)	36	Gray 6
	12	Yellow 2			
	13	Yellow 3			
	14	Yellow 4			
	15	Yellow 5			
Measurement 1 external synchronize	16	Yellow 6			
Measurement 2 external synchronize	17	Yellow 7			
Measurement 3 external synchronize	18	Yellow 8			
Measurement 4 external synchronize	19	Yellow 9			
Workpiece select input No. 2 or (BCD 2×10^0)	20	Yellow 10			
N.C.	21	Green 1			
N.C.	22	Green 2			
N.C.	23	Green 3			
N.C.	24	Green 4			
Input common terminal (COMMON)	25	Green 5			

- Make sure to ground the shielded wiring.
- Do not connect any terminals to the empty items.
- Input signal: 10mA or less per signal.
- Output signal: Use at DC24V, 40mA or less.

* The above is an example when the optional workpiece change and memory function are provided. The relationship between the signals and pin numbers may change depending upon the specifications.

RS-232C Communication Functions (options)

- (1) Connector: D-sub 9-pin connector (male), inch threads
- (2) Communication specifications

Communication standard	Complies with EIA, RS-232C, JIS-C6361
Communication method	All duplex
Synchronization	Asynchronous
DTE/DCE classification	DTE
Transmission code	ASCII
Data bit length	7 or 8 bits
Stop bit length	1 or 2 bits
Parity check	Even, odd, none
Baud rate (bps)	150, 300, 600, 1200, 2400, 4800, 9600, 19200

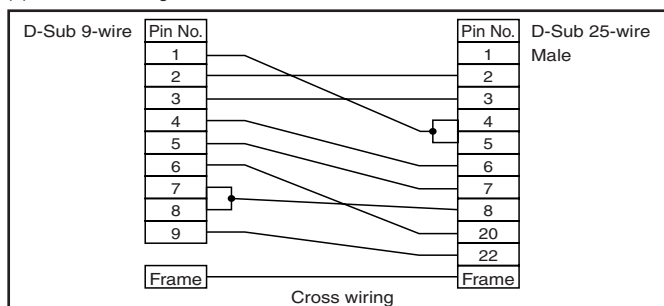
- (3) Allocation of pin numbers and signals

Pin No.	Signal name	Signal direction	Outline
1	(NC)	-	Not used
2	RD	Input	Receive data
3	TD	Output	Transmit data
4	DTR	Output	Data terminal ready (Turned On when power goes On)
5	GND	-	Signal ground
6	DSR	Input	Data set ready (Operation can be performed when On)
7	RTS	Output	Request to send (Turned On when power goes On)
8	CTS	Input	Can transmit (Operation can be performed when On)
9	(NC)	-	Not used

RS-232C Cable (optional)

- (1) Cable: AWG#28 twisted pair braided shield, UL2464
- (2) Connector: Control unit side: 9-wire male (#4-40 inch)
External device side: 25-wire male (M2.6 mm)

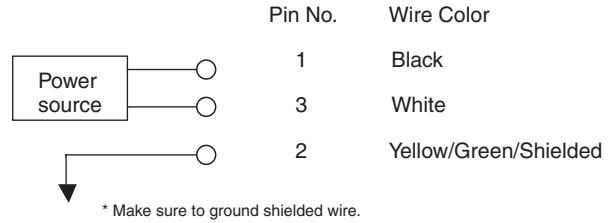
- (3) Connection diagram



* The RS-232C cable is not included in the RS-232C communication option. If required, please separately order.

Power Source

- (1) Power source voltage: AC85 - 250V
- (2) Power consumption: 50VA Max.
- (3) Connector: HS16P-3 (made by Hirose Electric)
- (4) Cable: Provided with 6m 3-wire cabtyre, Outer diameter ϕ 8.4mm



PULCOM V11 Detector Expansion Unit (Option)

Specifications

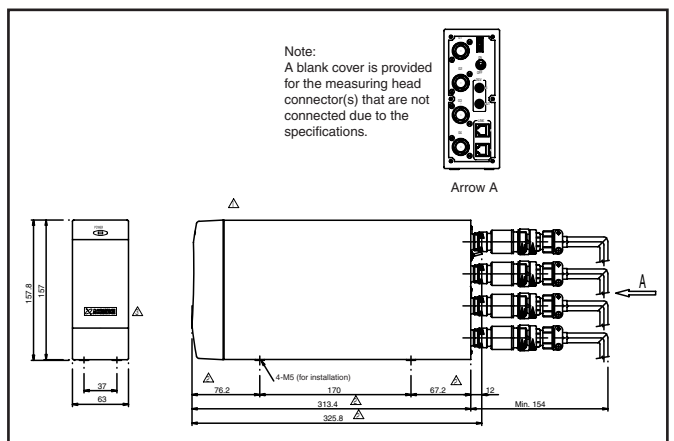
Model	E-PV11
Max. No. of detectors	4
No. of connectable V10	Max. 7 units
Input/output signals	High-speed serial transmission (11 Mbps)
Connection distance	100m
Ambient usage temperature	0 - 40°C
Ambient usage humidity	90% or less (no condensation)
Size shift function	Option
CE marking	Independently provided
Outer appearance	63(W) × 325(D) × 158(H) mm
Weight	3 kg

- (1) Power Source
Voltage: DC24V \pm 10%
Power consumption: 12W
Current consumption: 0.5A or less
Connector: FGG.OB.303.CLAD42 (LEMO), V11 side
Cable: Provided with 6m 2-wire shielded cable, outer diameter ϕ 3.8mm
Shielded wire: Provided with ground wire

Signal	Pin No.	Wire Color	Remarks
+24 V	1	Orange	Conductor: 12 wires/0.18 mm
COM	2	White	
	3	N.C.	

- Note 1: Adequate measures have been taken against noise in this product, but a dedicated power source and noise filter should be used to maximize system reliability.
Note 2: A power output is provided to enable power to be supplied to a separate V11. Power can be supplied to a maximum of 4 units from one dedicated power supply.

- (2) High-Speed Serial Output
Connector: TM20P-66P module plug (Hirose)
Cable: Provided with 0.5m twisted pair cable, outer diameter ϕ 4.8mm
- (3) Outer Appearance Diagram



Product Code

Product Code	Product Name
0930180	PULCOM V10A with E-PV15 O.C
0930181	PULCOM V10A with E-PV15 O.D
0930182	PULCOM V10A with E-PV15 O.C CE-MARK
0930183	PULCOM V10A with E-PV15 O.D CE-MARK

Options

Product Code	Product Name
0930117	BCD/Binary (open collector) output function
0930118	BCD/Binary (open emitter) output function
0930103	BCD/Binary (open drain) output function
0930104	Analog data output function
0930105	High-speed communication board HLS
0930106	RS-232C output function
0930107	RS-232C cable
0930108	PULCOM data link software (for V10)
0301006	Size shift function (4CH hardware only)
0301007	Size shift function up to 6D (software only)
0930112	Size shift function 7D-20D (software only)
0930109	Size shift function over 21D (software only)
0930110	Auto calibration
0930114	Measurement items (more than 5 items, 1 item at a time)
0930115	Memory (internal synchronization, auto synchronization)
0930116	Memory (external synchronization)
0930111	P100 (internal synchronization, auto synchronization)
0930113	P100 (external synchronization)
0930123	Memory (for post-process)
0930124	External auto zeroing function
0930121	Roundness measuring function (polar coordinate display, FET analysis)
0930122	Statistical processing (no judgment output)
0930125	Statistical processing (with output)
0930126	Workpiece change function (tolerance switching)
0930127	Workpiece diagramming
0930128	Average calculation
0930129	Repeat counter tool compensation
0930130	Indicator provided
0930131	RUN signal
0930132	In-process work condition display
0930135	Infinity function
0930133	External grade
0930134	Zero shift signal point shift/external shift
0930136	Zero shift
0930140	Temperature compensation
0937915	Temperature (for coolant, installation diameter $\phi 10$)
0937925	Temperature sensor (for workpiece surface temperature, installation diameter $\phi 11$)
0937930	Temperature sensor (for workpiece surface temperature, installation diameter $\phi 10$)
0328220	Record paper for printer (12 rolls)
0345589	PC card (Compact flash + PC card holder type)
0345591	Touch panel protective sheet (5 sheets/pack)
0930141	Tilt type amplifier stand
0930250	Printer (Japanese specifications) CT-S300-PJ100S
0930251	Printer (USA specifications) CT-S300-PF120F
0930252	Printer (European specifications) CT-S300-PF230S
0930253	RP8080T (Recording paper for CT-S300, 10 rolls)

Product Code	Product Name
0930184	PULCOM V10A with E-PV15-S O.C
0930185	PULCOM V10A with E-PV15-S O.D
0930186	PULCOM V10S with E-PV15-S O.C CE-MARK
0930187	PULCOM V10S with E-PV15-S O.D CE-MARK

Product Code	Product Name
0301013	I/O 1 board (open collector)
0301010	I/O 1 board (open drain)
0341202	I/O 1 cable 6M
0930142	I/O 1 cable custom length
0301011	I/O 2 board (open collector)
0301014	I/O 2 board (open emitter)
0301015	I/O 2 board (open drain)
0341200	I/O 2 cable 6M
0341201	I/O 2 cable custom length (approx. 1M)
0301012	I/O 3 board (open collector)
0301016	I/O 3 board (open drain)
0930143	I/O 3 board (for input only)
0930144	I/O 3 cable 6M
0930147	I/O 3 cable custom length (approx. 1M)
0930090	MINIAX counter board (2-channel)
0930148	Power cable 6M
0930155	Power cable custom length
0930156	Custom software development (at quoted production cost)
0930145	Conditions file (at quoted production cost)
0930146	Modified specification sheet (at quoted production cost)
0930157	PULCOM V11 E-PV11
0930158	V11 size shift function
0930152	24 V power cable 6M
0930159	24 V power cable custom length (approx. 1M)
0930154	V11 termination cable
0930161	V11 power cable for inline connection 0.5 M
0930162	V11 power cable for inline connection 1 M
0930164	V11 power cable for inline connection 3 M
0341217	V11 power cable for inline connection 6 M
0930163	V11 power cable for inline connection custom length
0341219	V11 connection cable 0.5 M
0930165	V11 connection cable 1 M
0930166	V11 connection cable 3 M
0930167	V11 connection cable 6 M
0930168	V11 connection cable custom length (approx. 1M)
0930169	V11CE marking compliant
0930160	V11 24 V power supply unit 30 W
0930170	V11 24 V power supply unit 50 W
0930171	V11 24 V power supply unit 100 W
0930172	V11 24 V power supply unit 100 W

