

## Application and installation addendum - high power optical system



**Applicable to the following units:**

<b>A-2107-0159</b>	<b>MP700E</b>
<b>A-2085-0096</b>	<b>MP10E</b>
<b>A-2033-7268</b>	<b>OMME</b>
<b>A-2075-0323</b>	<b>MI 12E</b>
<b>A-2075-0329</b>	<b>MI 12E (DIN-rail mount)</b>

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## Introduction

This document describes the different system components, explains how they must be configured and installed, and the cautions to be observed to avoid interference and cross-talk.

The high power optical transmission system is based upon standard optical systems, enhancements allow the system to transmit up to 12 m (39.3 ft) benefiting from reflections to maintain transmission. It enables the use of the MP700E and MP10E in applications requiring large probe and receiver separation.

<b>System comparison</b>		
	Operating range	Turn-on range
MP700E or MP10E and OMME	9.5 m (31.1 ft)	6 m (19.6 ft)
MP700 or MP10 and OMM	6 m (19.6 ft)	3 m (9.8 ft)
MP700 or MP10 and OM1	3 m (9.8 ft)	3 m (9.8 ft)

For dimensional and system operation, please use in conjunction with:

MP700 user guide - part no. H-2000-5132,

MP10 user guide - part no. H-2000-5059,

OMM user guide - part no. H-2000-5044,

MI 12 user guide - part no. H-2000-5073

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# System Components

## MP700E and MP10E

Using an MP700E or MP10E gives an increased 360° operating envelope over MP700 or MP10. The MP700E and MP10E probes are available in a 70° version with extended optical lobe.

## OMME

The OMME incorporates an auto-gain circuit which changes sensitivity according to the strength of the OMP signal.

## MI 12E

Processes signals between the OMME and the CNC machine control.



**CAUTION:** For optimum system performance, the MI 12E should only be used with high power optical systems.

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## System configuration and installation

High power systems must include the OMME and MI 12E and for maximum range the MP10E or MP700E. For medium ranges, standard MP700 and MP10 could be used.

A typical system will comprise of 2 x OMME, an MP10E / MP700E and MI 12E.

### Installation

When installing a system, OMMEs should be placed so they are in line-of-sight with the MP10E/MP700E during 'turn-on' and for as much of the gauging cycle as possible. If reflections are to be relied on, ensure the total transmission distance is within the straight-line range. Often, surfaces do not have to look reflective to reflect well.

When the best positions for the OMME have been found, temporarily mount the OMMEs and then move the probe to the extremities of travel, ensuring the signal strength of at least one OMME (at the MI 12E) is >1.5 volts and the turn on signal operates the MP10E / MP700E in the positions required. The OMME signal strength varies from 0.5 to 7 volts as the signal strength increases - the higher the signal the more robust the system against blind-spots and interference (use test points in MI 12E).

On multi-axis machines, zeroing of MP700 may be necessary during the gauging cycle. To maximise turn-on range, ensure both OMMEs are pointing at the point/points in the gauging cycle that turn-on is required.

If the OMME cable requires extending, it is recommended that a new screened cable with 16/0.2 conductors is used, connected close to the OMME. This can be up to 100 m long. Such a cable must be routed well away from power/drive cables.

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## Cross-talk between adjacent systems

Cross-talk between systems on machines in close proximity must be checked when systems are installed, since high power systems have shown reception at up to 30 m. When two probes are active on adjacent machines, each OMME will only pick up the closest probe and will usually ensure no cross-talk. The installation engineer should check the closest probe is the appropriate probe ie. on the same machine as the OMME, across the entire travel of the machine.

There is a further potential problem for a machine with its probe switched-off. Most CNC controls ignore the signal from a probe system unless they are executing a probing cycle. Some, however, register an error, which is a problem if the OMME picks up the signal from an inspection probe on an adjacent machine.

If cross-talk is encountered, either the OMME can be re-directed, or the OMME's sensitivity can be reduced in the same way as a standard OMM. If this doesn't work then optical systems cannot be fitted to adjacent machines and radio probes should be recommended.

## Transmission and reception envelope

The MP700E/MP10E has a 360° transmission envelope around probe centre line over the ranges shown on the opposite page.

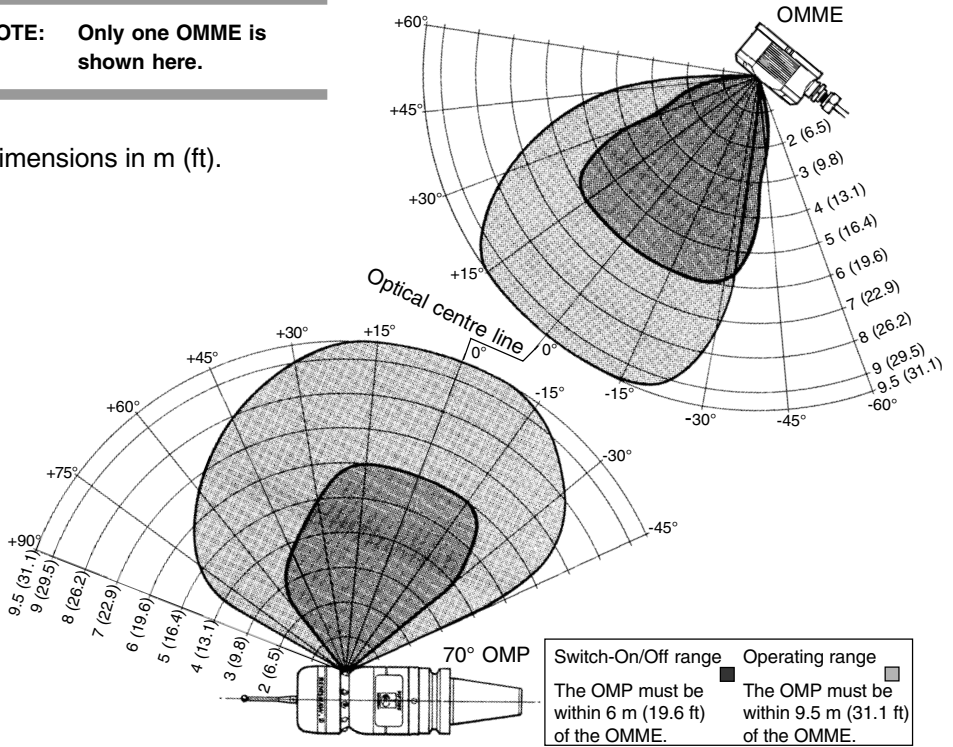
The OMP and OMME may deviate from the optical centre line, provided opposing light cones always overlap with transmitters and receivers mutually in each others field of view (eye to eye).

Absolute minimum (no reflection) plot shown.



**NOTE: Only one OMME is shown here.**

Dimensions in m (ft).



## PARTS LIST - Please quote the Part No. when ordering equipment

Type	Part No.	Description
MP10E kit	A-2085-0134	MP10E 70° probe (as below), 2 x OMME, 2 mounting brackets, MI 12E and PS3-1C stylus.
MP700E kit	A-2107-0227	MP700E 70° probe (as below), 2 x OMME, 2 mounting brackets and MI 12E.
MP10E kit	A-2085-0133	MP10E 70° probe (as below), 1 OMME, 1 mounting bracket, MI 12E and PS3-1C stylus.
MP700E kit	A-2107-0226	MP700E 70° probe (as below), 1 OMME, 1 mounting bracket and MI 12E.
MP10E kit	A-2085-0132	MP10E 70° probe (as below), 2 x OMME, 2 mounting brackets, DIN-rail MI 12E and PS3-1C stylus.
MP700E kit	A-2107-0225	MP700E 70° probe (as below), 2 x OMME, 2 mounting brackets and DIN-rail MI 12E.
MP10E kit	A-2085-0131	MP10E 70° probe (as below), 1 OMME, 1 mounting bracket, DIN-rail MI 12E and PS3-1C stylus.
MP700E kit	A-2107-0224	MP700E 70° probe (as below), 1 OMME, 1 mounting bracket and DIN-rail MI 12E.

<b>Type</b>	<b>Part No.</b>	<b>Description</b>
MP700E	A-2107-0159	MP700E 70° probe + battery, PS3-2C stylus, Ø8mm ball and tool kit. Factory set to optical off.
MP10E	A-2085-0096	MP10E 70° probe + battery, weak-link stem, Ø8mm ball and tool kit. Factory set to time out.
OMME	A-2033-7268	OMME.
MI 12E	A-2075-0323	MI 12E Interface unit.
MI 12E (DIN)	A-2075-0329	MI 12E Interface unit, DIN-rail mounting.
Mounting bracket	A-2033-0830	Mounting bracket with fixing screws, washer and nuts



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