

PN 112224 M Series DynaControl EtherNet/IP Adapter Option, V1.06

General

This optional adapter provides an EtherNet/IP connection for Dynamelt M Series hot melt ASUs. This connection makes it possible to monitor and control the basic functions of the hot melt unit from a remote PLC or PC.

This adapter uses an ODVA approved module. In order to fully operate, the Dynamelt M must be equipped with firmware rev. V5.15M or later.

Basic Features:

- 10/100 Mbit/s
- DHCP/BootP
- Access to basic process parameters
- Local and remote access
- Watchdog signal

Installing the EtherNet/IP-Adapter in a ControlLogix5000 System

These installation steps assume that RSLogix5000 and ControlLogix5000 with an EtherNet/IP module/bridge (1756 ENBT or similar) are set up and working properly.

1. Connect the Dynatec Hot melt unit (ASU) to the Ethernet network using a standard RJ45-cable.
2. Start RsLogix5000 with a new or existing project. Set to “Offline” mode.
3. **Add the EtherNet/IP-Adapter to the PLC Configuration:**
 - Start by right clicking the EtherNet/IP module/bridge in the configuration
 - Select “New Module”
 - Select “Generic Ethernet Module”
 - Press *OK*
4. **Configure the EtherNet/IP-Adapter:**
 - Enter the name of the module. (for example “Dynatec_Melter”. If you desire to import the controller tags provided on the CD-ROM, the module name must be exactly “Dynatec_Melter”. See step #6 following).
 - Set *Comm Format* to “Data-INT”, since all data are 16-bit words
 - Set *Connection Parameter Assembly Instance* to 100 for Input and 150 for Output
 - Set Size for 180 input/ 80 output (16 bit)
 - Set the *Configuration Instance* to 1 but the size to 0 since this instance is not supported
 - Set the IP-Address to 192.168.23.180. For more details about IP-Address see the following section, “Changing the IP-Address”
 - Press *Next >*
 - On next dialog, select *Requested Packet Interval: 100ms*
 - Do not Inhibit Module
 - Press *Finish >>*. On the main screen you should see the ETHERNET-MODULE under the I/O Configuration
 - Select “Go Online” from the “Communications” menu
 - Select “Download” in the next window
 - Confirm the Download

5. Checking the I/O Tags

After successful configuration of the EtherNet/IP-Adapter, it is possible to access the input/output data. There are three Controller Tags: “Dynatec Melter: C”, “Dynatec Melter: I” and “Dynatec Melter: O”. The input/output tags consist of 180/ 80 words each.

“Dynatec Melter: C” is the configuration tag (not used).

“Dynatec Melter: I” is the data coming from the Dynatec hot melt unit

“Dynatec Melter :O” holds the data going to the hot melt unit.

The definitions of the data tags are explained on the last pages of this section.

6. Importing Controller Tags

The CD-ROM that is provided with the EtherNet/IP option contains a pre-defined controller tag table. In order to save time, this table may be imported.

- In the RSLogix5000 go offline
- Select Tools -> Import Tags
- Select the “Dynatec-Controller-Tags_DMM. CSV” from the CD-ROM
- Click Import
- If the import was successful, the Report Window in the lower part of the screen should indicate 242 imported tags.
- Go online again
- Go back to the controller tag screen and verify the tags.

Details on the Communication

General Information

The In- and Out- data table (Controller Tags) contain all parameters for a maximum equipped hot melt machine. In most of the cases, only parts of the parameters are needed.

The temperature zones are logically organized, first all premelt zones, prog melt zones (= hopper), then filter blocks up to the auxiliary zones. The number of actually available zones depends on the type of machine.

- Setting LocalAccessTemps to 1 allows the user to make changes to the temperature setpoints on the hotmelt unit. The PLC can read the changes from the corresponding IN-words but the temperatures in the OUT area will not be effective on the hot melt unit.
- Setting LocalAccessTemps to 0 switches the control back to PLC control. All temperature OUT-words will be transferred to the hot melt unit. A local change of temperature setpoints is not possible since the PLC will instantly overwrite the entry.
- LocalAccessMotors controls the access to pump settings analog to the description above.
- After a local change of setpoints, the PLC first must read the new setpoints before switching back to PLC control.
- It is not possible to deactivate a temperature zone locally on the hot melt unit since the PLC always sends the ZoneEnable/Disable information.

Zones Enabling/Disabling

Temperature zones that are temporarily not used can be remotely deactivated by setting a corresponding value to OUT-word 70 to 75. Each bit of this word represents one temperature zone. Bit0 = zone1, Bit1 = zone2 etc. Setting the bit will activate the zone. Resetting will deactivate the zone.

Pump Control

There are several ways to control pump speed:

1. Manual Mode: the pump speed can be programmed locally on the hot melt machine. In order to allow this mode, the OUT-word 50 (for pump 1) must be set to 77 (ASCII "M"). Local Access PUMP (OUT-word 63) does not have to be set.
2. Automatic Mode: the pump speed is controlled via a 0 to 10V signal, connected to the hot melt machine. In order to activate this mode, the OUT-word 50 (for pump 1) must be set to 65 (ASCII "A").
The pump speed, which follows the line speed can be read in IN-word 134 (for pump 1). This value shows 0.1% resolution.
3. Stop Mode: The pump is stopped.
4. Bus Mode: the pump speed is controlled via OUT-word 56 (for pump 1). Out-word 50 (for pump 1) must be set to 66 (ASCII "B"). On the keypad of the hot melt machine, the pump speed can be fine tuned by using the min. and max. scaling, similar to the Automatic Mode.
The speed setting must be transmitted in increments of 0.1% (0 to 1000 = 0.0 to 100.0%).

Adhesive Level Indication

Word 142/ 143 (142 = single hopper/ 142 & 143 = dual hopper) shows the state of the optional adhesive level control. A 0 indicates the level is O.K. and a 1 indicates a low-level situation. This signal is an instantaneous non-latched indication.

In order to avoid local low-level indications, which have to be reset on the keypad, the low-level detection should be disabled in the customer set-up menu of the Dynamelt M hot melt unit.

Zone Status Indication

The status of all temperature zones can be read in IN-word 146 to 175. This information is bit-wise coded and organized in zone type.

Examples:

IN-word 146:	0003h	0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 0 0 1 1	premelt 1& 2 are switched ON
IN-word 150:	003Fh	0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 0 0 1 1 . 1 1 1 1	6 heads are switched ON
IN-word 156:	003Fh	0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 1 1 1 1	4 heads are in waiting position
IN-word 159:	0001h	0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 0 0 0 1	the progmelt (hopper) is heating
IN-word 167:	0020h	0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 0 0 1 0 . 0 0 0 0	hose 6 is ready
IN-word 175:	0011h	0 0 0 0 . 0 0 0 0 . 0 0 0 0 . 0 0 0 1 . 0 0 0 1	auxiliary zones 1 & 5 show alarm

Identification Word

OUT-word 79 is used as an identification word. This word must be set to a certain value to validate the communication. If this word is set differently, the hot melt unit will not accept the OUT area although the IN-area will show proper values. Dynamelt M hot melt units require ID-word set to 68 for unmonitored communication or a toggling word of 0/1 for monitored communication. If toggle mode is used, the word should toggle once per second to validate communication. Once toggle mode is used, the unmonitored communication can't be used again. In monitored communication, the Dynamelt unit switches off pumps after 4 seconds if communication seems to be broken. Dynatec recommends use of the monitored communication for security reasons.

Examples for a typical communication

Initializing:	Set OUT 76 to 1 :	Switches the controller on
	Set OUT 79 to 68 :	Identifies the communication
	Set OUT 77 to 0 :	No standby, normal mode
4-Hose Operation:	Set OUT 73 to 15 :	Hoses 1 to 4 are switched ON
	Set OUT 74 to 15 :	Heads 1 to 4 are switched ON
6-Hose Operation:	Set OUT 73 to 63 :	Hoses 1 to 6 are switched ON
	Set OUT 74 to 63 :	Heads 1 to 6 are switched ON
Check Ready Condition:	Compare IN 146 with 164	
	Compare IN 147 with 165	
	Compare IN 148 with 166	
	Compare IN 149 with 167	
	Compare IN 150 with 168	
	Compare IN 151 with 169:	If all comparisons are equal, the system is ready
Check Alarm Condition:	Read In 170 to 175	If any word does not equal 0, an alarm is present

Changing the IP-Address

The EtherNet/IP-Adapter will be factory set to 192.168.23.180 but the DHCP/BOOTP function is enabled. That means the module will request a new IP-address after power up. If this request is not serviced, the old IP-address will be valid.

There are several ways to change the IP-address. In any case, a PC must be connected to the module, either directly via crossover cable or via hub/switch to the network with the module.

Configuration Program 'Anybus IPconfig'

On the EtherNet/IP support disc you will find a configuration tool to change the IP-Address. Start the Anybus IPconfig installation program. Follow the instructions on the screen.

Once the configuration tool is running, press the scan button to search for any Dynatec-EtherNet/IP modules. If a module is detected, it will show up in the window. Double clicking on it will allow changing the settings for this Module.

Using the Configuration File

The file ethcfg.cfg can be used to change the IP-address. This method is possible only if the actual IP-address is known (e.g. the factory set 192.168.23.180), See also section “Configuration File”.

- Open a FTP connection to the module (e.g. Windows Explorer™ [FTP://192.168.23.180](ftp://192.168.23.180))
- Locate the ethcfg.cfg
- Copy this file to a folder on your PC
- Open the file with any text editor
- Change the IP-address
- Save the file using the same name
- Copy the file back to the module
- Re-cycle power on the module (hot melt unit)

Note: If the configuration file ethcfg.cfg is not found, the module will automatically activate a DHCP/BOOTP request.

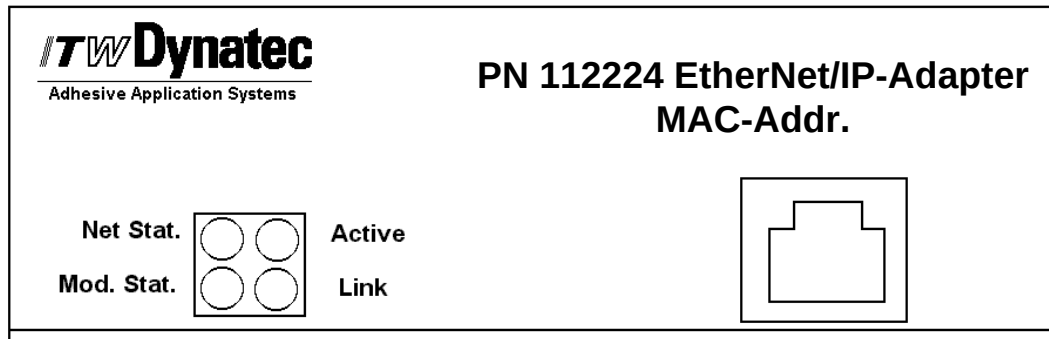
Using the BootP-Server Function

The BOOTP-Server comes with the RSLinx Tools of the Rockwell Automation™ Software or can be downloaded as a stand-alone application. Version V2.3.2 or newer allows to change the IP-address of the EtherNet/IP module.

Note: The EtherNet/IP module only requests an IP-address assignment for approx. 30 sec.

If this request is not serviced within this time (by entering the desired IP-address in the relation list) the module's power (hot melt machine) must be re-cycled.

Diagnostic LED's



1. Net Stat. = Network Status

State	Summary	Description
Steady Off	No power or no IP address	The module has no power or no IP address has been assigned.
Steady Green	Connected	The module has at least one established EtherNet/IP connection.
Flashing Green	No connections	There are no EtherNet/IP connections established to the module.
Flashing Red	Connection Timeout	One or more of the connections in which this module is the target has timed out. This state is only left if all timed out connections are re-established or if the module is reset.
Steady Red	Duplicate IP Address	The module has detected that its IP address is already in use
Flashing Green/Red	Self-Test	The module is performing a power on self test

2. Active

This led flashes green each time a packet is received or transmitted.

3. Mod. Stat. = Module Status

State	Summary	Description
Steady Off	No power	The module has no power.
Steady Green	Device operational	The module is operating correctly.
Flashing Green	Standby	The module has not been configured.
Flashing Red	Minor Fault	A minor recoverable fault has been detected

Steady Red	Major Fault	A major internal fault has been detected
Flashing Green/Red	Self-Test	The module is performing a power on self test

4. Link = Link Activity

Color	State	Description
Green	On	The module has a link
	Off	The module does not sense a link

Configuration File

The EtherNet/IP module contains a file (ethcfg.cfg) that is read by the module at start up. This file defines the network properties of the module. Any text editor can be used to edit the parameters.

Note: It is very important to follow the exact syntax specification, otherwise the module might have problems interpreting it, which can result in a faulty or non-expected behavior.

The file can be uploaded and after modification, downloaded using the FTP function. (e.g. open a Windows Explorer window. Type 'FTP://192.168.23.180')

The format of the file is shown as follows:

FORMAT	EXPLANATION
[IP address] 192.168.23.180	IP Address
[Subnet mask] 255.255.255.0	Subnet mask
[Gateway address] 0.0.0.	Gateway address
[DHCP/BOOTP] ON	DHCP/BootP ON - Enabled OFF – Disabled

[SPEED]	Speed
Auto	Auto – Default. Auto Negotiation will be used.
	100 – Forces the module to operate at 100Mbit/s only
	10 – Forces the module to operate at 10Mbit/s only

FORMAT	EXPLANATION
[Duplex]	Duplex
Auto	Auto – Default. Auto negotiation will be used.
	Full – Forces the module to operate at full duplex only
	Half - Forces the module to operate at half duplex only
[SMTP address]	SMTP server/ login settings
0.0.0.0	
[SMTP username]	SMTP server/ login settings
username	
[SMTP password]	SMTP server/ login settings
password	
[DNS1 address]	Primary and Secondary DNS
0.0.0.0	
[DNS2 address]	Primary and Secondary DNS
0.0.0.0	
[Domain name]	Domain Name (Optional)
hms.se	

 Adhesive Application Systems		Dynacontrol - EtherNet/IP Data Table		Date: 08.11.05 Page 1 of 5
		IN-Area (Dynacontrol to PLC)		Version: V5.18M
Word Address	Function	Zone Name	Valid Range	
0	Reserved			
1	Reserved			
2	Setpoint Premelt 1			
3	Setpoint Premelt 2			
4	Setpoint Premelt 3			
5	Setpoint Premelt 4			
6	Setpoint Premelt 5			
7	Setpoint Premelt 6			
8	Setpoint Progmelt 1			
9	Setpoint Progmelt 2			
10	Setpoint Progmelt 3			
11	Setpoint Filterblock 1			
12	Setpoint Filterblock 2			
13	Setpoint Filterblock 3			
14	Setpoint Hose 1			
15	Setpoint Hose 2			
16	Setpoint Hose 3			
17	Setpoint Hose 4			
18	Setpoint Hose 5			
19	Setpoint Hose 6			
20	Setpoint Hose 7			
21	Setpoint Hose 8			
22	Setpoint Hose 9			
23	Setpoint Hose 10			
24	Setpoint Hose 11			
25	Setpoint Hose 12			
26	Setpoint Head 1		100°F - 425°F	
27	Setpoint Head 2			
28	Setpoint Head 3			
29	Setpoint Head 4			
30	Setpoint Head 5			
31	Setpoint Head 6			
32	Setpoint Head 7			
33	Setpoint Head 8			
34	Setpoint Head 9			
35	Setpoint Head 10			
36	Setpoint Head 11			
37	Setpoint Head 12			
38	Setpoint Auxiliary 1			
39	Setpoint Auxiliary 2			
40	Setpoint Auxiliary 3			
41	Setpoint Auxiliary 4			
42	Setpoint Auxiliary 5			
43	Setpoint Auxiliary 6			
44	Setpoint Auxiliary 7			
45	Setpoint Auxiliary 8			
46	Setpoint Auxiliary 9			
47	Setpoint Auxiliary 10			
48	Setpoint Auxiliary 11			
49	Setpoint Auxiliary 12			
50	Motor Mode 1		S' (83) = Stop 'M' (77) = Manual (Local manual speed) 'A' (65) = Auto (0 to 10V) 'B' (66) = Bus (EtherNet/IP: OUT 56 to 61)	
51	Motor Mode 2			
52	Motor Mode 3			
53	Motor Mode 4			
54	Motor Mode 5			
55	Motor Mode 6			
56	Motor Speed 1		0 to 1000 = 0.0 to 100.0% [500 = 50.0%] (Local manual speed)	
57	Motor Speed 2			
58	Motor Speed 3			
59	Motor Speed 4			
60	Motor Speed 5			
61	Motor Speed 6			

Word Address	Function	Zone Name	Valid Range	
62	Pressure Channel 1		0 to 1500 PSI (requires digital pressure readout option)	
63	Pressure Channel 2			
64	Pressure Channel 3			
65	Pressure Channel 4			
66	Pressure Channel 5			
67	Pressure Channel 6			
68	Pressure Channel 7			
69	Pressure Channel 8			
70	Pressure Channel 9			
71	Pressure Channel 10			
72	Pressure Channel 11			
73	Pressure Channel 12			
74				
75				
76				
77				
78				
79				
80	Actual Temp. Premelt 1		0 to 500°F (1999 = open sensor / 999 = shorted sensor)	
81	Actual Temp. Premelt 2			
82	Actual Temp. Premelt 3			
83	Actual Temp. Premelt 4			
84	Actual Temp. Premelt 5			
85	Actual Temp. Premelt 6			
86	Actual Temp. Progmelt 1			
87	Actual Temp. Progmelt 2			
88	Actual Temp. Progmelt 3			
89	Actual Temp. Filterblock 1			
90	Actual Temp. Filterblock 2			
91	Actual Temp. Filterblock 3			
92	Actual Temp. Hose 1			
93	Actual Temp. Hose 2			
94	Actual Temp. Hose 3			
95	Actual Temp. Hose 4			
96	Actual Temp. Hose 5			
97	Actual Temp. Hose 6			
98	Actual Temp. Hose 7			
99	Actual Temp. Hose 8			
100	Actual Temp. Hose 9			
101	Actual Temp. Hose 10			
102	Actual Temp. Hose 11			
103	Actual Temp. Hose 12			
104	Actual Temp. Head 1			
105	Actual Temp. Head 2			
106	Actual Temp. Head 3			
107	Actual Temp. Head 4			
108	Actual Temp. Head 5			
109	Actual Temp. Head 6			
110	Actual Temp. Head 7			
111	Actual Temp. Head 8			
112	Actual Temp. Head 9			
113	Actual Temp. Head 10			
114	Actual Temp. Head 11			
115	Actual Temp. Head 12			
116	Actual Temp. Auxiliary 1			
117	Actual Temp. Auxiliary 2			
118	Actual Temp. Auxiliary 3			
119	Actual Temp. Auxiliary 4			
120	Actual Temp. Auxiliary 5			
121	Actual Temp. Auxiliary 6			
122	Actual Temp. Auxiliary 7			
123	Actual Temp. Auxiliary 8			

 Adhesive Application Systems		Dynacontrol - EtherNet/IP Data Table		Date: 08.11.05 Page 3 of 5	
		IN-Area (Dynacontrol to PLC)		Version: V5.18M	
Word Address	Function	Zone Name	Valid Range		
124	Actual Temp. Auxiliary 9				
125	Actual Temp. Auxiliary 10				
126	Actual Temp. Auxiliary 11				
127	Actual Temp. Auxiliary 12				
128	Actual Pump Speed 1		0 to 1500 = 0.0 to 150.0 RPM (requires RPM readout option)		
129	Actual Pump Speed 2				
130	Actual Pump Speed 3				
131	Actual Pump Speed 4				
132	Actual Pump Speed 5				
133	Actual Pump Speed 6				
134	Line Speed 1		0-1000 = 0 to 100.0% (0 to 10V)		
135	Line Speed 2				
136	Line Speed 3				
137	Line Speed 4				
138	Line Speed 5				
139	Line Speed 6				
140	Controller ON/OFF		0 = Controller is OFF / 1 = Controller is ON		
141	Standby ON/OFF		0 = Normal Mode / 1 = Standby is active		
142	Adhes. Level Status 1		0 = Level is OK / 1 = Level is low (requires level control option)		
143	Adhes. Level Status 2				
144					
145					
146	Premelts On/Off	Each zone is represented by the corresponding bit in these words	Bit0 to Bit 5	0 = Zone is OFF / 1 = Zone is ON	
147	Progmelts On/Off		Bit0 to Bit2		
148	Filterblocks On/Off		Bit0 to Bit2		
149	Hoses On/Off		Bit0 to Bit11		
150	Heads On/Off		Bit0 to Bit11		
151	Aux. Zones On/Off		Bit0 to Bit11		
152	Premelts Waiting		0 = Zone is not waiting / 1 = Zone is waiting		
153	Progmelts Waiting				
154	Filterblocks Waiting				
155	Hoses Waiting				
156	Heads Waiting				
157	Aux. Zones Waiting				
158	Premelts Heating		0 = Zone is not heating / 1 = Zone is heating		
159	Progmelts Heating				
160	Filterblocks Heating				
161	Hoses Heating				
162	Heads Heating				
163	Aux. Zones Heating				
164	Premelts Ready		0 = Zone is not ready/ 1 = Zone is ready		
165	Progmelts Ready				
166	Filterblocks Ready				
167	Hoses Ready				
168	Heads Ready				
169	Aux. Zones Ready				
170	Premelts Alarm		0 = Zone has no alarm / 1 = Zone has alarm		
171	Progmelts Alarm				
172	Filterblocks Alarm				
173	Hoses Alarm				
174	Heads Alarm				
175	Aux. Zones Alarm				
176					
177					
178					
179	Watchdog		Signal toggles every 0.5sec. (0/1)		

Word Address	Function	Zone Name	Valid Range
0	Reserved		
1	Reserved		
2	Setpoint Premelt 1		
3	Setpoint Premelt 2		
4	Setpoint Premelt 3		
5	Setpoint Premelt 4		
6	Setpoint Premelt 5		
7	Setpoint Premelt 6		
8	Setpoint Progmelt 1		
9	Setpoint Progmelt 2		
10	Setpoint Progmelt 3		
11	Setpoint Filterblock 1		
12	Setpoint Filterblock 2		
13	Setpoint Filterblock 3		
14	Setpoint Hose 1		
15	Setpoint Hose 2		
16	Setpoint Hose 3		
17	Setpoint Hose 4		
18	Setpoint Hose 5		
19	Setpoint Hose 6		
20	Setpoint Hose 7		
21	Setpoint Hose 8		
22	Setpoint Hose 9		
23	Setpoint Hose 10		
24	Setpoint Hose 11		
25	Setpoint Hose 12		
26	Setpoint Head 1		
27	Setpoint Head 2		
28	Setpoint Head 3		
29	Setpoint Head 4		
30	Setpoint Head 5		
31	Setpoint Head 6		
32	Setpoint Head 7		
33	Setpoint Head 8		
34	Setpoint Head 9		
35	Setpoint Head 10		
36	Setpoint Head 11		
37	Setpoint Head 12		
38	Setpoint Auxiliary 1		
39	Setpoint Auxiliary 2		
40	Setpoint Auxiliary 3		
41	Setpoint Auxiliary 4		
42	Setpoint Auxiliary 5		
43	Setpoint Auxiliary 6		
44	Setpoint Auxiliary 7		
45	Setpoint Auxiliary 8		
46	Setpoint Auxiliary 9		
47	Setpoint Auxiliary 10		
48	Setpoint Auxiliary 11		
49	Setpoint Auxiliary 12		
50	Pump Mode 1		
51	Pump Mode 2		
52	Pump Mode 3		
53	Pump Mode 4		
54	Pump Mode 5		
55	Pump Mode 6		
56	Set Speed Pump 1		
57	Set Speed Pump 2		
58	Set Speed Pump 3		
59	Set Speed Pump 4		
60	Set Speed Pump 5		
61	Set Speed Pump 6		

100°F - 425°F
only active if Local Access Temps. O.Data[62] is set to 0

S' (83) = Stop
'M' (77) = Manual (Local manual speed)
'A' (65) = Auto (0 to 10V)
'B' (66) = Bus (EtherNet/IP: OUT 56 to 61)

0 to 1000 = 0.0 to 100.0% [500 = 50.0%]
only active when pump in in Bus-Mode

Word Address	Function	Zone Name	Valid Range	
62	Local Access Temps.	all temp. zones	set to 1 enables setpoint changes on keypad to 0 enables setpoint changes via EtherNet/IP	
63	Local Access Pumps	all pumps		
64				
65				
66				
67				
68				
69				
70	Premelts On/Off	Each zone is represented by the corresponding bit in these words	Bit0 to Bit 5	each bit: 1 = zone enabled
71	Progmelts On/Off		Bit0 to Bit2	
72	Filterblocks On/Off		Bit0 to Bit2	
73	Hoses On/Off		Bit0 to Bit11	
74	Heads On/Off		Bit0 to Bit11	
75	Aux. Zones On/Off		Bit0 to Bit11	
76	Controller ON/OFF		set to 0 to switch off / set to 1 to switch on	
77	Standby ON/OFF		set to 0 for normal mode / set to 1 for standby mode	
78				
79	Identification Word		DM-M: has to be set to 68 or toggled 1/0 for monitored communication	