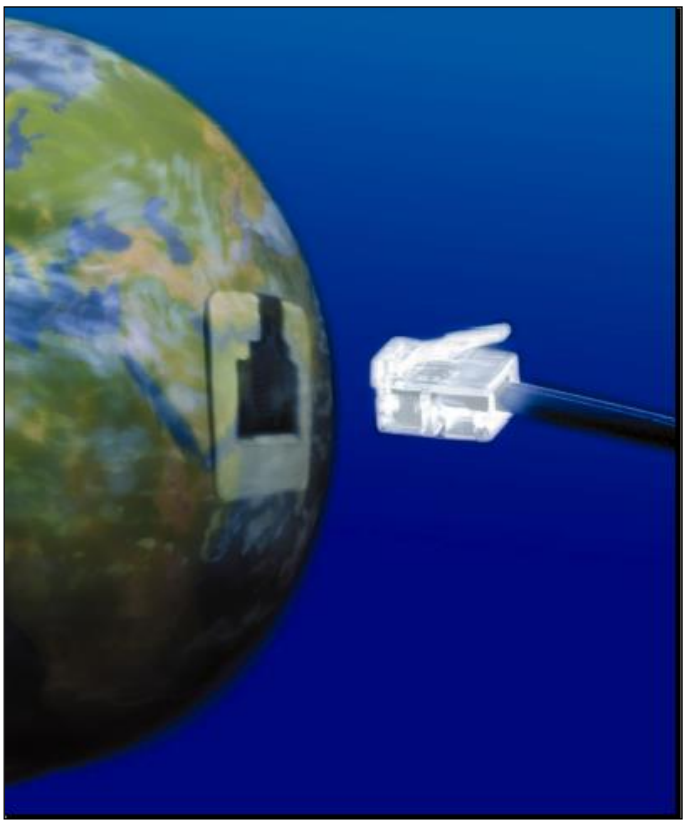
Appendix for PowerFocus 6000

Open Protocol

Atlas Copco Tools and Assembly Systems

Appendix Specification release 2.8
Rev. 2 – Valid from 2.8.14



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1 Introduction

Open Protocol is an interface for building applications for remote control or data subscription of controllers. It is platform independent and can be implemented on Linux, PLC, printers, and all Windows platforms for example.

The Open Protocol supports Ethernet connection towards Power Focus 6000.

This document specifies all the product Power Focus 6000 specific considerations when using the Open Protocol.

2 Power Focus 6000 specifics

2.1 MID support

This section lists MID and MIDs revision supported by PF 6000. The Revision figures in the columns set means that the product has support for all revisions from 0 up to and inclusive the revision figure.

Sign "-" means that the product hasn't support for the MID and Revision.

Sign "p" means that at least one revision of the MID is partly supported.

This table is valid for the following releases.

PF6000	**2.8**

Table 1 MID/Revision support

MID	Name	Revision	Ref Chap/Note
0001	Communication start	6	
0002	Communication start acknowledge	6 p	
0003	Communication stop	1	
0004	Command error	1	
0005	Command accepted	1	
0010	Parameter set ID upload request	1	See chap 2.5
0011	Parameter set ID upload reply	1	See chap 2.5
0012	Parameter set data upload request	4 p	See chap 2.5
0013	Parameter set data upload reply	4 p	See chap 2.5
0014	Parameter set selected subscribe	1	See chap 2.5
0015	Parameter set selected	1 P	See chap 2.5
0016	Parameter set selected acknowledge	1	See chap 2.5
0017	Parameter set selected unsubscribe	1	See chap 2.5
0018	Select Parameter set	1	See chap 2.5
0019	Set Parameter set batch size	1	See chap 2.6
0020	Reset Parameter set batch counter	1	See chap 2.6
0021	Lock at batch done subscribe	1	
0022	Lock at batch done upload	1	Note! In PF6000 this signal indicates when locked by batch sequence completed
0023	Lock at batch done upload acknowledge	1	
0024	Lock at batch done unsubscribe	1	
0025	Download Pset. Toyota Appendix	-	
0030	Job ID upload request	2	
0031	Job ID upload reply	2	
0032	Job data upload request	2	
0033	Job data upload reply	2 p	
0034	Job info subscribe	4	
0035	Job info	4 p	
0036	Job info acknowledge	4	
0037	Job info unsubscribe	4	
0038	Select Job	2	See chap 2.7
0039	Job restart	1	

0040	Tool data upload request	**5**	
0041	Tool data upload reply	**5 p**	
0042	Disable tool	**1**	
0043	Enable tool	**1**	
0044	Disconnect tool request	**-**	
0045	Set calibration value request	**1**	
0046	Set primary tool request	**-**	
0047	Pairing handling	**-**	
0048	Pairing status	**-**	
0049	Paring status acknowledge	**-**	
0050	Vehicle ID number download request	**1**	
0051	Vehicle ID number subscribe	**2**	
0052	Vehicle ID number	**2**	
0053	Vehicle ID number acknowledge	**2**	
0054	Vehicle ID number unsubscribe	**2**	
0060	Last tightening result data subscribe	**8**	
0061	Last tightening result data	**8 p**	
0062	Last tightening result data acknowledge	**8**	
0063	Last tightening result data unsubscribe	**8**	
0064	Old tightening result upload request	**8**	**See chapter 2.4 for the special handling of MID 64**
0065	Old tightening result upload reply	**8p**	**See chapter 2.3 for parameters not supported**
0070	Alarm subscribe	**3**	
0071	Alarm	**3**	
0072	Alarm acknowledge	**3**	
0073	Alarm unsubscribe	**3**	
0074	Alarm acknowledged on controller	**3**	
0075	Alarm acknowledged on controller acknowledge	**3**	
0076	Alarm status	**3**	**Only active events that need acknowledgement are sent.**
0077	Alarm status acknowledge	**3**	
0078	Acknowledge alarm remotely on controller	**1**	
0080	Read time upload request	**1**	
0081	Read time upload reply	**1**	
0082	Set time	**1**	
0090	Multi-spindle status subscribe	**-**	
0091	Multi-spindle status	**-**	
0092	Multi-spindle status acknowledge	**-**	
0093	Multi-spindle status unsubscribe	**-**	
0100	Multi-spindle result subscribe	**-**	
0101	Multi-spindle result	**-**	
0102	Multi-spindle result acknowledge		
0103	Multi-spindle result unsubscribe	**-**	
0105	Last PowerMACS tightening result data subscribe	**-**	
0106	Last PowerMACS tightening result Station data	**-**	
0107	Last PowerMACS tightening result Bolt data	**-**	
0108	Last PowerMACS tightening result data acknowledge	**-**	
0109	Last PowerMACS tightening result data unsubscribe	**-**	
0110	Display user text on compact	**-**	
0111	Display user text on graph	**-**	
0113	Flash green light on tool	**1**	

0120	Job line control info subscribe	**1**	
0121	Job line control started	**1**	
0122	Job line control alert 1	**1**	
0123	Job line control alert 2	**1**	
0124	Job line control done	**1**	
0125	Job line control info acknowledge	**1**	
0126	Job line control info unsubscribe	**1**	
0127	Abort Job	**1**	
0128	Job batch increment	**1**	
0129	Job batch decrement	**1**	
0130	Job off	**-**	
0131	Set Job line control start	**1**	
0132	Set Job line control alert 1	**1**	
0133	Set Job line control alert 2	**1**	
0140	Execute dynamic Job request	**1 p**	
0150	Identifier download request	**1**	
0151	Multiple identifiers work order subscribe	**-**	
0152	Multiple identifiers work order	**-**	
0153	Multiple identifiers work order acknowledge	**-**	
0154	Multiple Identifiers work order unsubscribe	**-**	
0155	Bypass identifier	**-**	
0156	Reset latest identifier	**-**	
0157	Reset all identifiers	**-**	
0200	Set external controlled relays	**1 p**	
0210	Status external monitored inputs subscribe	**1**	**For initial 211, a device with configured External monitored signals is needed!**
0211	Status external monitored inputs	**1**	
0212	Status external monitored inputs acknowledge	**1**	
0213	Status external monitored inputs unsubscribe	**1**	
0214	IO device status request	**2**	
0215	IO device status reply	**2**	
0216	Relay function subscribe	**1**	
0217	Relay function	**1**	
0218	Relay function acknowledge	**1**	
0219	Relay function unsubscribe	**1**	
0220	Digital input function subscribe	**1**	**Chapter 2.2**
0221	Digital input function	**1**	
0222	Digital input function acknowledge	**1**	
0223	Digin function unsubscribe	**1**	
0224	Set digital input function	**1**	
0225	Reset digital input function	**1**	
0240	User data download	**-**	
0241	User data subscribe	**-**	
0242	User data	**-**	
0243	User data acknowledge	**-**	
0244	User data unsubscribe	**-**	
0250	Selector socket info subscribe	**1 P**	
0251	Selector socket info	**1 P**	
0252	Selector socket info acknowledge	**1 P**	
0253	Selector socket info unsubscribe	**1 p**	
0254	Selector control green lights	**2**	

0255	Selector control red lights	**2**	
0260	Tool Tag ID request	**1**	
0261	Tool Tag ID subscribe	**1**	
0262	Tool Tag ID	**1**	
0263	Tool Tag ID acknowledge	**1**	
0264	Tool Tag ID unsubscribe	**1**	
0270	Controller reboot request	**-**	
0400	Automatic/Manual mode subscribe	**1**	
0401	Automatic/Manual mode	**1**	
0402	Automatic/Manual mode acknowledge	**1**	
0403	Automatic/Manual mode unsubscribe	**1**	
0410	AutoDisable settings request	**-**	
0411	AutoDisable settings reply	**-**	
0420	Open protocol commands disabled subscribe	**1**	
0421	Open protocol commands disabled	**1**	
0422	Open protocol commands disabled acknowledge	**1**	
0423	Open protocol commands disabled unsubscribe	**1**	
500	Motor tuning result data subscribe	**1**	
501	Motor tuning result data	**1**	**Event 2022 has to be configured to Display in the Power Focus**
502	Motor tuning result data acknowledge	**1**	
503	Motor tuning result data unsubscribe	**1**	
504	Motor tuning request	**1**	
8000	Audi emergency status subscribe	**-**	
8001	Audi emergency status	**-**	
8002	Audi emergency status acknowledge	**-**	
8003	Audi emergency status unsubscribe	**-**	
9999	Keep alive open protocol communication	**0**	

2.2 Supported MID Relay and Digital Input Signal

Table 22 MID 0215 Relay number

Relay number	Relay function	Tracking event
00	Off	
01	OK	Yes
02	NOK	Yes
03	Low	No
04	High	No
05	Low Torque	Yes
06	High Torque	Yes
07	Low angle	Yes

08	High angle	Yes
09	Cycle complete	No
10	Alarm	No
11	Batch NxOK	No
12	Job OK	Yes
13	Job NOK	Yes
14	Job running	Yes
15	Car is done	No
16	Car is done status Ok	No
17	Not used	
18	POWER FOCUS ready	Yes
19	Tool ready	Yes
20	Tool start switch	Yes
21	Dir. switch = CW	Yes
22	Dir. switch = CCW	Yes

[2] X = 31 + 4*Number of relays present
[3] Y = X + 8 + 4*Number of digital inputs present

Relay number	Relay function	Tracking event
23	Tightening direction CCW	No
24	Tool tightening	Yes
25	Tool loosening	Yes
26	Tool running	Yes
27	Tool running CW	Yes
28	Tool running CCW	Yes
29	Statistic alarm	No
30	Tool locked	No
31	Received identifier	No
32	Running Pset bit 0	No
33	Running Pset bit 1	No
34	Running Pset bit 2	No
35	Running Pset bit 3	No
36	Running Job bit 0	No
37	Running Job bit 1	No
38	Running Job bit 2	No
39	Running Job bit 3	No
40	Not used	
41	Not used	
42	Not used	
43	Not used	
47	Service indicator	No
48	Fieldbus relay 1	No
49	Fieldbus relay 2	No
50	Fieldbus relay 3	No
51	Fieldbus relay 4	No
52	Tool red light	No
53	Tool green light	No
54	Tool yellow light	No
55	Reserved	No
56	Reserved	No
57	Reserved	No
58	Reserved	No
59	Running Pset bit 4	No
60	Running Pset bit 5	No
61	Running Pset bit 6	No
62	Running Pset bit 7	No
63	Running Job bit 4	No

64	Running Job bit 5	No

Relay number	Relay function	Tracking event
65	Running Job bit 6	No
66	Running Job bit 7	No
67	Sync OK	No
68	Sync NOK	No
69	Sync spindle 1 OK	No
70	Sync spindle 1 NOK	No
71	Sync spindle 2 OK	No
72	Sync spindle 2 NOK	No
73	Sync spindle 3 OK	No
74	Sync spindle 3 NOK	No
75	Sync spindle 4 OK	No
76	Sync spindle 4 NOK	No
77	Sync spindle 5 OK	No
78	Sync spindle 5 NOK	No
79	Sync spindle 6 OK	No
80	Sync spindle 6 NOK	No
81	Sync spindle 7 OK	No
82	Sync spindle 7 NOK	No
83	Sync spindle 8 OK	No
84	Sync spindle 8 NOK	No
85	Sync spindle 9 OK	No
86	Sync spindle 9 NOK	No
87	Sync spindle 10 OK	No
88	Sync spindle 10 NOK	No
89	Carrier in station	No
90	Enable scanner	Yes
91	Line Control Start	Yes
92	Job Aborted	No
93	External controlled 1	Yes
94	External controlled 2	Yes
95	External controlled 3	Yes
96	External controlled 4	Yes
97	External controlled 5	Yes
98	External controlled 6	Yes
99	External controlled 7	Yes

100	External controlled 8	Yes
101	External controlled 9	Yes
102	External controlled 10	Yes
103	ToolsNet connection lost	No
104	Open Protocol connection lost	No
105	FieldBus Offline	No
106	Home position	No

Relay number	Relay function	Tracking event
107	Batch NOK	No
108	Selected Channel in Job	No
109	Safe to disconnect tool	No
110	Running Job bit 8	No
111	Running Pset bit 8	No
112	Calibration Alarm	No
113	Cycle start	No
114	Low current	No
115	High current	No
116	Low PVT monitoring	No
117	High PVT monitoring	No
118	Low PVT selftap	No
119	High PVT selftap	No
120	Low tightening angle	No
121	High tightening angle	No
122	Identifier identified	No
123	Identifier type 1 received	No
124	Identifier type 2 received	No
125	Identifier type 3 received	No
126	Identifier type 4 received	No
127	Reserved	
128	Reserved	
129	Ring button ack.	No
130	DigIn controlled 1	No

131	DigIn controlled 2	No
132	DigIn controlled 3	No
133	DigIn controlled 4	No
134	Fieldbus carried signals disabled	No
135	Illuminator	No
136	New parameter set selected	No
137	New Job selected	No
138	Job OFF relay	No
139	Logic relay 1	No
140	Logic relay 2	No
141	Logic relay 3	No
142	Logic relay 4	No
143	Max coherent NOK reached	No
144	Batch done	No
145	Start trigger active	No
146	Final angle start	No
150-250	Reserved	
251	Completed Batch bit 0	No

Relay number	Relay function	Tracking event
252	Completed Batch bit 1	No
253	Completed Batch bit 2	No
254	Completed Batch bit 3	No
255	Completed Batch bit 4	No
256	Completed Batch bit 5	No
257	Completed Batch bit 6	No
258	Completed Batch bit 7	No
259	Remaining Batch bit 0	No
260	Remaining Batch bit 1	No
261	Remaining Batch bit 2	No
262	Remaining Batch bit 3	No
263	Remaining Batch bit 4	No
264	Remaining Batch bit 5	No
265	Remaining Batch bit 6	No
266	Remaining Batch bit 7	No
271	Next tight	No
272	Power On	No
273	Toyota fault	No
274	Toyota fault or Ng	No

275	Open Protocol commands disabled	No
276	Cycle abort	No
277	Effective loosening	Yes
278	Logic relay 5	No
279	Logic relay 6	No
280	Logic relay 7	No
281	Logic relay 8	No
282	Logic relay 9	No
283	Logic relay 10	No
284	Lock at batch done	No
285	User Id Ok	No
286	Pin Ok	No
287	Battery low	No
288	Battery empty	No
289	Tool connected	No
290	No tool connected	No
291	Toyota fixed stop	No
292	Tyota temp stop	No
293	Function button	Yes

Relay number	Relay function	Tracking event
294	Rehit	No
295	Tightening disabled	Yes
296	Loosening disabled	Yes
297	Positioning disabled	No
298	Motor tuning disabled	No
299	Open End tuning disabled	No
300	Tracking disabled	No
301	Pass authorized	No
302	PLUS Automatic mode	Yes
303	PLUS Emergency mode	No
304	Wear indicator	No
305	Direction alert	No
306	PLUS Bolt reworked	No
307	Line stop	No

308	Running pset bit 9	No
309	Active XML Result Ack	No
310	Tool in work space	No
311	Tool in product space	No
312	XML protocol active	No
313	Tool enabled by XML	No
314	Necking failure	No
315	PLUS protocol not active	No
316	PLUS No tightening	No
317-350	Reserved	
351	Middle course trigger active	No
352	Front trigger active	No
353	Reverse trigger active	No

Table 94 MID 0215 DigIn number

DigIN number	DigIN function	
00	Off	
01	Reset batch	Yes
02	Unlock tool	Yes
03	Tool disable n.o.	No
04	Tool disable n.c.	No
05	Tool tightening disable	Yes
06	Tool loosening disable	Yes
07	Remote start puls	Yes
08	Remote start cont.	Yes
09	Tool start loosening	Yes
10	Batch increment	Yes
11	Bypass Pset	Yes

DigIN number	DigIN function	
12	Abort Job	Yes
13	Job off	No
14	parameter set toggle	No

15	Reset relays	No
16	parameter set select bit 0	Yes
17	parameter set select bit 1	Yes
18	parameter set select bit 2	Yes
19	parameter set select bit 3	Yes
20	Job select bit 0	Yes
21	Job select bit 1	Yes
22	Job select bit 2	Yes
23	Job select bit 3	Yes
24	Reserved	
25	Reserved	
26	Reserved	
27	Reserved	
28	Line control start	Yes
29	Line control alert 1	Yes
30	Line control alert 2	Yes
31	Ack error message	Yes
32	Fieldbus digin 1	No
33	Fieldbus digin 2	No
34	Fieldbus digin 3	No
35	Fieldbus digin 4	No
36	Flash tool green light	No
37	Reserved	
38	Reserved	
39	Set bistable relay 1	Yes
40	Set bistable relay 2	Yes
41	Reserved	
42	Reserved	
43	Reserved	
44	Reserved	
45	parameter set select bit 4	No
46	parameter set select bit 5	No
47	parameter set select bit 6	No
48	parameter set select bit 7	No
49	Job select bit 4	No
50	Job select bit 5	No
51	Job select bit 6	No
52	Job select bit 7	No
53	Batch decrement	Yes

DigIN number	DigIN function	
54	Job restart	No
55	End of cycle	No
56	Tool back in position	No
57	Reset tool locked	No
58	DC switch in AND	No
59	DC switch out AND	No
60	DC switch in OR	No
61	DC switch out OR	No
62	Click wrench 1	No
63	Click wrench 2	No
64	Click wrench 3	No
65	Click wrench 4	No
66	ID Card	No
67	Automatic mode	Yes
68	External monitored 1	Yes
69	External monitored 2	Yes
70	External monitored 3	Yes
71	External monitored 4	Yes
72	External monitored 5	Yes
73	External monitored 6	Yes
74	External monitored 7	Yes
75	External monitored 8	Yes
76	Select next parameter set	No
77	Select previous parameter set	No
78	Disable FB Job status	No
79	Timer enable tool	No
80	Master unlock tool	Yes
81	ST Scan request	No
82	Disconnect tool	No
83	Job select bit 8	No
84	Parameter set select bit 8	No
85	Request ST scan	No
86	Reset NOK counter	Yes
87	Bypass identifier	No
88	Reset latest identifier	No
89	Reset all identifier	No
90	Set home position	No
91	DigOut monitored 1	No
92	DigOut monitored 2	No
93	DigOut monitored 3	No

94	DigOut monitored 4	No
95	Disable ST Scanner	No

DigIN number	DigIN function	
96	Disable fieldbus carried signals	No
97	Toggle CW/CCW	No
98	Toggle CW/CCW for next run	No
99	Set CCW	No
100	Dig In emergy mode	No
101	Dig in pass	No
102	Dig in interlock off	No
103	Dig in backup tool	No
104	Open Protocol commands disable	No
105	Logic digIn 1	No
106	Logic digIn 2	No
107	Logic digIn 3	No
108	Logic digIn 4	No
109	Logic digIn 5	No
110	Logic digIn 6	No
111	Logic digIn 7	No
112	Logic digIn 8	No
113	Logic digIn 9	No
114	Logic digIn 10	No
115	Dig In start timing	No
116	Dig In request timing	No
117	Dig In judgement timing	No
118	Dig In stop timing	No
119	Dig in request and start timing	No
120	Forced CCW once	No
121	Forced CCW toggle	No
122	Forced CW once	No
123	Forced CW toggle	No
124	Dig In poka yoke pass	No
125	Poka yoke backup tool	No
126	Tool behind	No
127	Tool in front of	No

128	Toyota test mode	No
129	Pset select bit 9	No
130	Store current tightening program in the tool	No
131	Active XML result send	No
132	Tool in work space	No
133	Tool in product space	No
134	Flash tool yellow light	No
135	XML Emergency mode	No
150-200	Reserved	No
201	Tool blue light IO controlled	No

DigIN number	DigIN function	
202	Tool blue light	No
203	Tool green light IO controlled	No
204	Tool green light	No
205	Tool red light IO controlled	No
206	Tool red light	No
207	Tool yellow light IO controlled	No
208	Tool yellow light	No
209	Tool white light IO controlled	No
210	Tool white light	No
300-349	Reserved	No

2.3 Revision Support

Table 2 Parameters not supported in PF6000

MID	MID	Rev	Parameter
All	All		Cell Id
13	Parameter set data upload reply	1	Batch size

Table 3 Parameters not supported or managed under special conditions in PF6000

MID	MID	Rev	Parameters/Conditions
2	CommunicationStartAcknowledge	2	Supplier code
2	CommunicationStartAcknowledge	3	Open Protocol version

2	CommunicationStartAcknowledge	4	RBU Type
2	CommunicationStartAcknowledge	5	System subtype
12	Parameter set data upload request	3,4	Not supporting different Pset file versions, always interpret as 00000000
13	Parameter set data upload reply	3,4	Parameter 14, 19, 20 not supported. Parameter 17, angle used for calculating time
33	Job Data	1	Max time for first tightening
33	Job Data	1	Use line control
33	Job Data	1	Repeat Job
33	Job Data	1	Tool loosening
33	Job Data	3	Job List
35	Job Info, parameter 4	1	Show batch size for current batch. If legacy counter mode is used, it will count as specified in OP Specification
35	Job Info, parameter 5	1	Show batch count for current batch. If legacy counter mode is used, it will count as specified in OP Specification
35	Job Info	3	Job step type
39	Job restart	1	No check if performed
41	Tool data upload reply	2	Motor size
61	LastTighteningResultDataUploadReply	1	Channel ID
61	LastTighteningResultDataUploadReply	2	Strategy Options
61	LastTighteningResultDataUploadReply	2	current monitoring status
61	LastTighteningResultDataUploadReply	2	prevail torque monitoring status
61	LastTighteningResultDataUploadReply	2	prevail torque compensate status
61	LastTighteningResultDataUploadReply	2	tightening error status
61	LastTighteningResultDataUploadReply	2	rundown angle
61	LastTighteningResultDataUploadReply	2	current monitoring min
61	LastTighteningResultDataUploadReply	2	current monitoring max
61	LastTighteningResultDataUploadReply	2	current monitoring value
61	LastTighteningResultDataUploadReply	2	selftap torque
61	LastTighteningResultDataUploadReply	2	prevail torque monitoring min
61	LastTighteningResultDataUploadReply	2	prevail torque monitoring max
61	LastTighteningResultDataUploadReply	2	prevail torque
61	LastTighteningResultDataUploadReply	2	job sequence number
61	LastTighteningResultDataUploadReply	2	sync tightening id
61	LastTighteningResultDataUploadReply	5	Customer tightening error code
61	LastTighteningResultDataUploadReply	6	Prevail Torque compensate value

61	LastTighteningResultDataUploadReply	6	Tightening error status 2
61	LastTighteningResultDataUploadReply	8	Start final angle not supported for multistep
61	LastTighteningResultDataUploadReply	998	Number of stages in multistage
61	LastTighteningResultDataUploadReply	998	Number of stage results
61	LastTighteningResultDataUploadReply	998	Stage result
65	OldTighteningResultUploadReply	2	Strategy options
65	OldTighteningResultUploadReply	2	Current Monitoring Status
65	OldTighteningResultUploadReply	2	Prevail Torque monitoring status
65	OldTighteningResultUploadReply	2	Prevail Torque compensate status
65	OldTighteningResultUploadReply	2	Tightening error status
65	OldTighteningResultUploadReply	2	Current Monitoring Value
65	OldTighteningResultUploadReply	2	Self-tap torque
65	OldTighteningResultUploadReply	2	Prevail torque
65	OldTighteningResultUploadReply	2	Job sequence number
65	OldTighteningResultUploadReply	2	Sync tightening ID
65	OldTighteningResultUploadReply	2	Tool serial number
65	OldTighteningResultUploadReply	5	Customer tightening error code
65	OldTighteningResultUploadReply	6	Prevail Torque compensate value
65	OldTighteningResultUploadReply	6	Tightening error status 2
65	OldTighteningResultUploadReply	8	Start final angle not supported for multistep
140	Dynamic Job	1	Not supported Parameters: 5,6,7,8,10,11,12,14,15,16,17,18 Not checking if Pset exist.
200	SetExternalControlledRelays	1	Will set signals Generic IO 1-10
251	SelectorSocketInfoUpload	1	Multiple selectors will be sent as device one. Configuration and mapping in VS important, socket 08 can be in selector 2 etc.

2.4 MID 64/65 – Old result data, special support

In the PF6000, all results are assigned an ID, as in the PF4000. However, these IDs are global and if multiple tools are used (and in most other cases) the tightening ID for a result is not incremented by one. So this imply that an integrator doesn't know which ID it shall send to get a specific result. The partially support for the old result MIDs (64 and 65) shall therfore be used as described below.

The integrator shall always use 0 to get the latest result, as in the PF4000. If the integrator knows an ID to start from it shall send the ID decremented by one. The PF6000 will then answer with the latest result on a global level. The result received at the integrator will most probably not have the ID it sent, but it is

guaranted that the result is the previous from the ID sent. The integrator shall then use the received ID decremented by one to get the next latest result. This shall then be continued until the integrator recives an ID it knows or until the PF6000 doesn’t find any more results.

Important to know if more than one tool is or have been used at the station: The old result will be fetched at a global level that will say the received result may belong to another tool/Virtual Station than the connected one. It is thetrefore important for the integrator to filter the recived old result against the Station Id that is part of Rev 7 in MID 65 and in Rev 6 of the Communication start Ack, MID 2.

Example of fetching three old results, integrator knows about tightening ID 10204 and the stations uses two tools.

Integrator sends: MID 1, Communication start

PF6000 answer: MID 2, Station ID in parameter 14 is 6534 and saved by Integrator.

Integrator sends: MID 64, ID = 0

PF6000 answer: MID 65, tightening ID = 10230, Station ID = 6534

Integrator sends: MID 64, ID = 10229

PF6000 answer: MID 65, tightening ID = 10226, Station ID = 6534

Integrator sends: MID 64, ID = 10225

PF6000 answer: MID 65, tightening ID = 10220, Station ID = 6685 (not the connected VS, throw away)

Integrator sends: MID 64, ID = 10219

PF6000 answer: MID 65, tightening ID = 10216, Station ID = 6685 (not the connected VS, throw away)

Integrator sends: MID 64, ID = 10215

PF6000 answer: MID 65, tightening ID = 10209, Station ID = 6534

Integrator sends: MID 64, ID = 10208

PF6000 answer: MID 65, tightening ID = 10204, Station ID = 6534

The received tightening ID was known by the integrator, all missed results fetched from PF6000.

2.5 Usage of Tightening program (Pset) selection

In order to be able to select tightening programs in Power Focus 6000 the Virtual Station needs to use a Source Tightening as task. If using MID 0010-0011 with no task or any other task but Source Tightening, the Power Focus 6000 will send a list back containing indexes of all tightening programs from Tightening menu. If a Source Tightening is not selected, the Power Focus 6000 will not be able to use MID 0018 and instead, the Power Focus 6000 will respond with error MID 0004, status 03 – Parameter set cannot be set.

When a Source Tightening is used the Tightening program list that will be sent by MID 0011 will consist of the list that is configured in the selected Source Tightening task. The ID/index in the message will be the same as the configured “Identifier number” in the Source Tightening. That will say, it will NOT be the Tightening program index found in the Tightening menu.

When selecting by MID 0018, the ID/index to send is the one that is received with MID 0011. This is the configured “Identifier number” in the selected Source Tightening. If trying to select and ID/index that is not configured as an “Identifier number”, even if there is a Tightening program with this index in the tightening menu, the error MID 0004, status 03 – Parameter set can not be set, will be sent from the Power Focus 6000.

When subscribing for selected Tightening program, MID 0014-0017, the sent ID/index from the Power Focus 6000 will always be the index for the Tightening program found in the tightening menu. This implies that the configured “Identifier number” in the selected Source Tightening will never be sent with MID 0015. In all MIDs containing Tightening program info (like MID 0061), the ID/index will always be the one found in the tightening menu, not the configured “Identifier number” in the selected Source Tightening.

When using MID 0012 to fetch Tightening program data, the ID/index to use shall always be the one found in the tightening menu and not the configured “Identifier number” in the selected Source Tightening.

2.6 Usage of Tightening program (Pset) batch size

In Power Focus 6000 it is possible to run dynamic batch control on Tightening program level. To do so the Virtual Station need to run a Source Tightening task configured to use External Batch Control. It is then possible to send MID 0019 to select a batch size for a configured Tightening Program.

If a command request to set batch size for a non-existing Tightening Program, that is a non programmed identifier in the list in the Source Tightening configuration, a command error MID 0004 with status 79 will be returned.

It is possible to setup batch sizes for non selected Tightening Programs, but that is in the Source Tightening configuration list. However, if there is a configuration change of the running Source Tightening, the cached batch sizes will be reset and the client need to set all batch sizes again.

MID 0020 is now also supported to reset current running batch. However, the payload data will not have any effect. The Power Focus 6000 will not check if the reset command is for the current running Tightening Program.

2.7 Usage of Sequence (Job) selection

Since Power Focus 6000 release 2.7 the virtual station is required to run a Source Batch configured with number as selection input, to select Job, MID 0038 and get Job list, MID 0030-0031. If this requriment is not fulfilled, MID 0030-0031 and MID 0038 will not work. If using MID 0030-0031 without Source Batch configured with numbers, the Power Focus 6000 will send an empty list back. If trying to use MID 0038 without a Source Batch configured with numbers, the Power Focus 6000 will respond with error MID 0004, status 20 – Job can not be set.